

Wyong Shire Council

ORDINARY COUNCIL MEETING

ENCLOSURES

Wednesday, 28 May, 2014



WYONG SHIRE COUNCIL
ENCLOSURES TO THE
ORDINARY COUNCIL MEETING
TO BE HELD IN THE COUNCIL CHAMBER,
WYONG CIVIC CENTRE, HELY STREET, WYONG
ON WEDNESDAY, 28 MAY 2014,
COMMENCING AT 5.00PM

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CPA/219532, CPA/219529

20 June 2013

The Director Mining and Industry Projects
Department of Planning and Infrastructure
GPO Box 39
SYDNEY NSW 2001

Attention: Mr Clay Preshaw

Dear Sir

Exhibition Wallarah 2 Coal Project EIS - Application No. SSD-4974

Thank you for the opportunity to make a submission in response to the public exhibition of the abovementioned EIS. Wyong Shire Council in conjunction with Gosford City Council, has engaged Pells Sullivan Meynink Engineering Consultants (PSM) to review the EIS having regard to the implications of mining on the water catchment. In this regard, PSM has focussed their comments on the following aspects:

- Impact on groundwater
- Impact on surface water
- Impact on flooding
- Impact of subsidence
- Risk assessment and adaptive management of issues

A complete copy of PSM's report is attached with the findings summarised below. Wyong Shire Council objects to the current proposal based on the findings and recommendations contained in PSM's report.

In addition to the report by PSM, Wyong Council has engaged Earth Systems to review the EIS having regard to the potential environmental and planning issues related to the project, with the exception of those aspects reviewed by PSM. Wyong Shire Council objects to the current proposal based on the findings and recommendations contained in the Earth Systems report, a complete copy of which is attached. The findings and recommendations of Earth Systems are also summarised below and address the following aspects:



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- Structure and approach of the EIS
- Stakeholder engagement
- Water quality impacts
- Air quality impacts
- Greenhouse gas emissions
- Noise and vibration impacts
- Ecological impacts
- Traffic and transport
- Visual amenity
- Archaeology and cultural heritage
- Impacts beyond the Director General's Requirements
- Management and monitoring

It should be noted that as of Wednesday 19 June, 2013, the "water trigger amendment" to the EPBC Act was passed through the Senate. The Bill is now awaiting assent by the Governor-General, with the changes under the Bill set to commence the day after assent.

The Bill's passage now means the Commonwealth is responsible for ensuring water systems are not impacted by major coal seam gas and coal mining projects. Under the Bill, a person, a constitutional corporation or the Commonwealth (or agency) commits an offence if they take an action involving coal seam gas development or large coal mining development, and the action has, will have or is likely to have a significant impact on a water resource, unless they first obtain approval for the action for the Commonwealth environment minister under the EPBC Act.

The approval trigger will apply to an action which has, or is likely to have, a significant impact on water resources whether in its own right or when considered with other developments.

The Bill's passage now means the Commonwealth is responsible for ensuring water systems are not impacted by major coal seam gas and coal mining projects. Under the Bill, a person, a constitutional corporation or the Commonwealth (or agency) has committed an offence if they take an action involving coal seam gas development, or large coal mining development, and the action has, will have or is likely to have a significant impact on a water resource, unless they first obtain approval for the action for the Commonwealth environment minister under the EPBC Act.

The existing EPBC Act provides definitions of "coal seam gas development" and "large coal mining development" as any activity involving coal seam gas extraction or any coal mining activity (respectively) that has, or is likely to have, a significant impact on water resources. The definition of a water resource in this amendment is the same as currently used in the Water Act 2007. A water resource relates to ground water and surface water, and includes organisms and ecosystems that contribute to the physical state and environmental value of the water resource.

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According to the Department of Sustainability, Environment, Water, Population and Communities guidelines on the definition of a "significant impact", a significant impact is an impact that is important, notable or of consequence, having regard to its context or intensity. A significant impact on water resources may be caused by one development action relating to coal seam gas or large coal mine, or the cumulative impact of such actions. Under the National Partnership Agreement, factors which may directly or indirectly bring about a significant impact on water resources could include those that:

- change in the quantity, quality or availability of surface or ground water;
- alter ground water pressure and/ or water table levels;
- alter the ecological character of a wetland;
- result in rivers or creeks diverted or impounded;
- alter drainage patterns;
- reduce biological diversity or change species composition;
- alter coastal processes, including sediment movement or accretion, or water circulation patterns;
- result in persistent organic chemicals, heavy metals, or other potentially harmful chemicals accumulating in the environment such that biodiversity, ecological integrity, human health or other community and economic use may be substantially adversely affected; or
- substantially increase demand for, or reduce the availability of water for the environment.

Although the Amendment post-dates the Wallarah 2 Coal Project EIS submission, it would apply to any developments (such as this Project) that are currently referred for a decision that is in the approval process, where the Independent Expert Scientific Committee has not yet given advice.

The transitional arrangements provide that if the process of having a development assessed under the EPBC Act has already commenced, the Minister has 60 days (from the commencement of the Bill) to decide whether the project requires approval in relation to the new water trigger. The Minister then has to advise and consult with the proponents affected on the proposed decision for a period of 10 days before a final decision is made.

Following is a summary of each of the issues, however, both the PSM reports and the Earth Systems report need to be read in their entirety.

1 IMPACT ON GROUNDWATER

The EIS underestimates the potential impact on groundwater. The conclusions reached in the EIS are primarily the result of the input parameters adopted for their numerical modeling. These input parameters are primarily driven by the unsuitable method by which the makeup of the rock and its defects have been sampled and are not consistent with available data or modeling within the EIS. Further, the modeling assumes recharge of the water system based on average climatic conditions.

The EIS implies that water inflow to the mine, of up to 2.5ML/day would largely come from water stored in the ground. However, it avoids the fact that water stored in the ground comes from somewhere, and is currently in equilibrium with natural recharge. A valid way to consider this matter is encapsulated in the following quotation from Dr Rick Evans, principal hydrogeologist of Sinclair Knight Merz, viz:

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"There is no free lunch here. It's very simple – every litre of water you pump out of the ground reduces river flow by the same amount".

Australian Financial Review,
24 May 2007

Other points to note are:

- Precisely what portions of which rivers will be affected by leakage losses from the near surface alluvial lands into the deeper rock mass cannot be defined;
- The time it will take for the impact of underground extraction to reflect in surface flows cannot be determined;
- The EIS states that the mine will not fully recover groundwater pressures for over 500 years.

These points, combined with the uncertainty on the input parameters to the groundwater modeling suggest there is a high probability that leakage losses from the alluvial lands will impact the surface water. Given the high likelihood or even near certainty that climate impacts would be sufficiently severe at some point implies that it may affect visible flows for long periods.

On balance, the findings from the EIS are at the least a limited and probably unconservative view of potential impacts. This means that, at present, it is not known with an acceptable level of confidence what the likely impacts of the Wallarah 2 longwalls will be on groundwater resources, and on groundwater that feeds into the streams of the Dooralong and Yarramalong Valleys.

2 IMPACT ON SURFACE WATER

The EIS underestimates the impact on surface water. Loss of surface water from streams in either the Yarramalong and/or the Dooralong Valley will have a direct impact on the availability of water in the Wyong River downstream of the proposed mine which is used as part of the water supply to the Wyong and Gosford Local Government Areas. Further, loss of surface water will also affect businesses such as turf farming and supply of water to local bores.

The assessment of loss of surface water is entirely dependent on the inputs to groundwater modeling and the impacts on groundwater flow by the mine. The EIS concludes that there will be very little impact on leakage from the near surface alluvial lands due to the very low permeability of the rock below the alluvial lands and, that what loss does occur will be readily compensated for by surface recharge.

These statements are based on two assumptions. Firstly, that average climactic conditions prevail and secondly, a favourable view of the permeability of the rock below the alluvial lands. The latter point is discussed above under the topic of groundwater modeling, but suffice to say there is considered to be a high level of uncertainty and a lack of factual evidence to confirm the parameters used.

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With regard to the first point above, for the EIS to be relevant, it must also consider the variation in inputs to the surface water supply in extended dry periods. The review in the PSM report considers the flow in Jilliby Creek between 1972 and 2013 to illustrate the sensitivity of the stream flow to climate and to small variations in flow volumes, viz:

- The median flow rate in the creek is about 4.5 ML/day.
- Flows of less than 1ML/day occurred for 24% of the time
- Flows of less than 0.1 ML/day occurred for 10% of time.

The predicted water inflow to the mine of up to 2.5ML/day represents more than half of the average flow for Jilliby Creek and is greater than the flows recorded for 40% of the time since 1972.

These flows are put into perspective when records of consecutive days, since 1972, where low flows are considered. The five longest periods of consecutive days when flow was less than 1 ML/day and 2 ML/day range from 112 up to 190 days. This shows that when dry periods occur, the flow in the creeks can be expected to be at a level that may be readily affected by leakage losses from the alluvial lands.

Further, a review of the climate during this period reveals that while some periods of drought did occur such as the Millennium Drought, it does not include the experience of the more intense droughts of World War 2, and the time of Federation.

3 FLOODING

The results of the flood assessment appear reasonable given the limits of the prediction of subsidence and can be considered as "best practice".

The discussion on the impacts of the W2CP on flooding are made in relation to the 1% AEP event (1 in 100 year) and would only fully come into effect after mining has been completed. It is important to note that the assessment of flooding is dependent on the expected subsidence and so any change to mine plans, or the prediction of subsidence through any validation process will result in changes to the extent and impact of flooding.

Results of the flood modeling for the 1% AEP flood event indicate that subsidence from the current W2CP mine plan is likely to result in only relatively minor increases in the depth and extent of flooding compared to current, pre-mining estimates with a total of about 35Ha of additional land becoming affected across the whole W2CP area.

The changes to flooding extents will have an adverse effect on up to 10 properties. The impact is assessed to be up to 5% of additional land area inundated for 4 of these Properties and up to 20% of additional land area for the remaining 6 properties.

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In terms of impacts on residential dwellings, a total of 5 properties that were not previously impacted by the 1 in 100 year flood level are now impacted by flood water depths of between 4cm and 1.27m above floor level. These are assessed as being Major impacts in the system of 'Flood Impact Categories' adopted by the EIS. In addition to these dwellings, a further one dwelling is Categorised as being subject to a Major Impact, in this case the expected 1 in 100 year flood level increase by up to 41cm above current, pre-mining predictions.

In the moderate flood impact category, a total of 8 dwellings will see a rise in the currently predicted inundation levels due to the 1%AEP event by between 3cm and 17cm. A further 3 dwellings will have the level of clearance, or freeboard between the predicted flood level and dwelling floor level reduced to values of between 4cm and 28cm.

Minor impacts are expected to occur to a total of 10 dwellings and comprise increased levels of flooding above floor level by between 1cm and 4cm and reduced levels of freeboard above flood levels.

Further to the dwellings described above, a total of 14 dwellings are expected to have no significant change in flood impacts while a total of 49 properties will see a slight reduction in flood impacts.

Other impacts of the subsidence on flooding are flood peak flows are anticipated to be slightly reduced with a minor increase in the duration of the peak, although the EIS notes these as being insignificant.

Flooding will impact a total of 30 primary and secondary access roads in the project area. Of these 6 primary access route low points will be adversely impacted by the mine. Adverse impacts comprise increased duration of flooding of between 1hour and up to 27 hours. The latter time pertains to the crossing (D50) located toward the southern end of Jilliby Road just north of the intersection with Watagan Forest Drive.

Mitigation of the impacts of flooding can readily be undertaken by the WACJV. Detailed plans for each location and/or dwelling are not provided at this stage of the process and are only required after approval has been given.

At this time, the only indication of the extent of potential mitigation is in relation to the Major and Moderate Impact Categories.

Preliminary descriptions of possible mitigation works presented in the EIS comprise:

- Raising or relocating dwellings;
- Raising Sandra Street to increase the upstream flood retarding storage;
- Construction of grassed earthen levees around dwellings to provide a minimum freeboard of 0.3m; and
- Construction of new replacement dwellings.

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The purchase of dwellings is mentioned as an option, but is not linked to any dwellings in the EIS, nor is any mechanism or process for such an option canvassed.

In terms of primary access points, the six adversely affected locations can be raised after subsidence has occurred to mitigate the adverse effect. In some instances, the works may require new culvert works to facilitate passage of flood waters past the obstacles.

Council is concerned regarding the longer term maintenance requirements of any mitigation measures.

The discussion on potential flood mitigation measures remain at a feasibility level but are considered appropriate and to constitute "best practice" for this level of appraisal. Detailed assessment will be required if planning approval is given and this must ensure all the Director General's requirements are met.

4 IMPACT OF SUBSIDENCE

Subsidence is the prime and most readily notable impact of underground longwall mining. The extent and magnitude of subsidence has a controlling influence on potential damage to property and the extent and nature of flooding and movement of surface water.

The prime result of mining are the expected number and severity of impacts across the 245 properties within the area affected by the predicted subsidence, viz:

- 83% of properties being unaffected;
- 12% requiring very minor to minor repair;
- 5% requiring substantial to extensive repair; and
- <0.5% requiring a complete rebuild (ie. about 1 property).

These impacts are based on predictions of subsidence comprising:

- Vertical subsidence up to 2.6m with less subsidence predicted in residential areas to the east and more subsidence within forested areas to the west.
- Tilts up to 15mm/m concentrated above the edges of the panels and over forested areas.
- Tensile strains up to 4mm/m concentrated near the edge of panels. About 99% of these strains are expected to be less than 2.5 mm/m.
- Compressive strains up to 5.5 m/m concentrated about 50m inside the panel edges. About 99% expected to be less than 3.3 mm/m.
- Far field movements up to ~60 mm horizontally at a distance of around 1km from mining diminishing to less than 25 mm at a distance of 2 km.

The subsidence prediction used for W2CP was developed using three key components:

1. The predictive model developed using the empirical Incremental Profile Method (IPM) by the specialist subsidence consultant MSEC;

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2. The method used to calibrate the empirical predictive model by the consultant Strata Control Technology (SCT); and
3. Chain pillar performance.

Firstly, the situation at the proposed WZCP is unique in as much as it would be a deep underground coal mine in Newcastle Coal Measures, which have traditionally been mined at relatively shallow depths. It is from these experiences that the IPM has had to draw empirical data from. That is, the experience from shallow underground coal mining in similar geology to the WZCP from the Newcastle Coal fields along with the experience from mining at similar depths to the WZCP from the Southern Coal Fields, which are in a different geological environment.

As a result, the predictions of subsidence by MSEC, based on the empirical IPM approach was calibrated against computer based modeling by SCT and it is the result of this combination of empirical mining experience and computer modeling calibration that forms the prime aspect of the review herein.

In summary PSM concludes that:

- Based on their discussions with WZCP, PSM understands that something like 4 to 5 panels would need to be extracted before a full model calibration exercise could be undertaken to assess the validity of the subsidence prediction and modeling undertaken.
- The reliability and accuracy of the SCT method is unknown as:
 - There is a reliance on extrapolated inputs to which the method has been shown to be sensitive.
 - The model is calibrated to site-specific data, and not to a small number of measurements from other sites.
 - The sensitivity to most input parameters is not presented.
- Due to the empirical nature of the method the Incremental Profile Method (IPM) is only as reliable as the data to which it is calibrated, in this case the SCT model results. Therefore the reliability and accuracy of the IPM is in doubt.

This is to some extent recognised by MSEC who in the EIS state:

"A thorough calibration...will only be achieved after subsidence monitoring data is obtained and analysed".

- The use of one predictive model to calibrate another is generally unwise and not widely regarded as best practice.
- The IPM is stated as being conservative and likely to over predict impacts. The evidence for this conservatism and the expected magnitude with respect to WZCP are not provided. Indeed all indications are that the model development is centred around matching expected conditions and not exceeding or over-predicting them.

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- There is a reliance on pillar compression after extraction resulting in a smoother subsidence profile. However, the basis for this assumption appears to conflict the Geological Report (Appendix G), where significant variation in both roof and floor conditions is expected across the site.
- The EIS acknowledges that pillar compression may not occur but does not quantify the impacts or changes in impact should this not occur.
- First longwall will prove that this pillar compression assumption is valid.
- No less than 3 longwalls (L1N to L3N) and more likely 4 to 5 longwalls are required before the pillar compression theory can be verified.

PSM accepts that these predicted impacts are in agreement with expectations based on measured subsidence impacts elsewhere, and the Newcastle and Southern Coalfields in particular.

PSM is in general agreement that should the predicted level of subsidence occur, the type distribution and severity of impacts on houses, buildings and infrastructure is likely to be similar to that stated in the EIS.

PSM does not agree that the prediction represents a conservative estimate of subsidence impacts as all the evidence presented in the EIS suggests the prediction represents the most likely impacts.

PSM considers that the model, calibration and application of the prediction does not provide sufficient guidance as to the sensitivity and reliability of the method and may, therefore, fail the Director General's "reasonable level of confidence" test.

In general PSM did not find any omissions or evidence to suggest that subsidence due to W2CP is likely to be significantly different to that predicted by the EIS. PSM's main concern is the lack of certainty around the predictive method and the likely variation in prediction based on observed variations that are already known and potentially those unknown.

5 RISK ASSESSMENT AND ADAPTIVE MANAGEMENT

In terms of groundwater impacts and to a lesser extent surface subsidence, the EIS presents an abridged assessment of the potential impacts and hazards posed by the W2CP. This situation arises as the EIS only considers risks that have been modeled by the specialist consultants and is thereby limited by the specialist assumptions and either lack of or limited sensitivity assessments. This is not considered appropriate at this stage of the assessment where transparency as to the entire gamut of potential impacts should be canvassed.

Further, the consequence rankings at the high end of assessment have been combined and limit the risk assessment process by requiring that severe, long term and/or potentially irreversible impacts must also be wide spread to warrant a high ranking.

In order to begin to allow the impacts of the project to be managed via adaptive management, the understanding of the impacts and risks must be robust and comprehensive, and quantitative in nature, not qualitative as is the case here.

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The risk assessment should consider the level of risk associated with all aspects of the W2CP, and in particular those that:

- Are associated with a high level of severity in terms of consequence,
- Have a high degree of uncertainty surrounding the assessment/modeling,
- Have consequences that either may not/cannot be able to be remediated, mitigated or managed once they are observed, or
- Represent a significant degree of community concern.

The results of a rigorous, qualitative risk assessment could then be considered with respect to acceptable levels of risk, and/or a cost/benefit assessment. The latter of which may, of course result in high consequence impacts with a low risk and/or cost impact being disregarded in the final assessment of the project. However, as stated above, they all need to be considered and presented so an informed judgement/decision can be made.

In terms of the aspects of the project covered in this report, PSM recommend the following be subject to a detailed risk assessment process.

1. Ground Water Impacts – test the sensitivity of the baseflow water losses with respect to hydraulic conductivity, level of subsidence induced by mining and environmental factors such as drought.
2. Subsidence Impacts – test the magnitude and location of subsidence effects with respect to items such as variability of the roof conditions of the mine and strength of pillars.

If the impacts of the mine are to be managed via adaptive management then a risk assessment is essential in order for the process to be:

- Correctly focused; and
- Establish realistic and measurable targets.

Following this, and possibly with the assistance of a cost/benefit assessment, for an adaptive management plan to be effective it must be based on targets for monitoring and assessment that are:

- specific;
- measurable; and
- agreed between all parties.

Further, the targets must be accompanied by agreed responses otherwise the management system would be reduced to an impotent and disingenuous process.

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Agreed responses may be as minor as "continue to monitor / watch" to potentially quarantining coal below the alluvial areas or even as strong as "cease mining".

6 STRUCTURE AND APPROACH OF THE EIS

The EIS should fully consider and assess the different phases of the mine. The EIS does not adequately assess construction impacts, focusing primarily on operations. Impacts and issues associated with air quality, water quality and transport are likely to be significantly different during construction. The EIS does not adequately consider closure planning and no assessment of potential closure impacts has been undertaken. The EIS does not demonstrate that the Project would be closed in a manner that safeguards the environment and community assets.

The Proponent's risk assessment and cost benefit analysis is based on the results of the EIS. The risks, benefits and costs associated with the Project need to be re-rated based on the knowledge gaps and uncertainties that remain and the findings of further recommended studies.

An Environmental Management System has not been developed for the Project, nor is there a commitment to develop such a system.

The project proponent has not committed to regular independent environmental audits throughout the project life cycle. However, the project proponent has committed to developing an Annual Review Report to systematically assess performance and identify areas for improvement.

7 STAKEHOLDER ENGAGEMENT

The Proponent has still failed to adequately engage with the community during the environmental assessment process and consequently limited consultation has been conducted. The EIS does not provide sufficient information on the concerns raised by the community during consultation.

8 WATER QUALITY

The EIS does not assess impacts on surface water quality associated with the construction phase of the Project, nor does it provide management and mitigation measures for any potential impacts. There is no contingency for the Project if development does impact on water quality or hydrology.

The mined materials and wallrock of the deposit have not been assessed in terms of their ability to leach acid and metalliferous drainage (AMD). This is a significant oversight as AMD / saline drainage can be one of the most long-lived environmental impacts from coal mining.

The surface water monitoring program does not include a sampling point immediately downstream of the proposed Wallarah Creek tributary discharge site

The EIS does not provide contingency for overflow of untreated mine water from the Mine Operations Dam (MOD) in the event that overflow may occur.

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The baseline assessment for groundwater quality appears to have included measurement of only pH and TDS, neglecting other key analytical parameters and therefore not providing a suitable baseline.

Mitigation measures for groundwater impacts are limited to repairing damaged bores from subsidence and replacing water supply if groundwater drawdown exceeds expectations. Mitigation for groundwater quality is not directly articulated.

9 AIR QUALITY

The methodology for air quality impact assessment does not appear to have been undertaken in a manner consistent with applicable legislation (DECC, 2005). Some modeling appears to include only Project emissions rather than Project emissions with baseline conditions. This provides a misleading assessment of likely dust levels that will be experienced by surrounding communities. Construction impacts and impacts associated with certain climatic conditions are not clearly outlined.

Predicted Project-related emission concentrations from dispersion modeling assume Project implementation of best practices. These estimates are only relevant provided these controls are implemented. It is unclear whether the EIS commits the Project to these management and mitigation measures.

10 GREENHOUSE GAS

Greenhouse gas emission mitigation strategies are very brief and do not demonstrate a sufficient level of commitment by the Proponent to reduce emissions. As such the Greenhouse Assessment does not adequately address the terms listed in the Director-General's Environmental Assessment Requirements and the Supplementary Director-General's Requirements.

11 NOISE AND VIBRATION

It is unclear whether the control measures identified in the Noise and Vibration specialist study are Project commitments or recommended best practices. The results of noise modeling are only valid if the recommended attenuation measures are committed to and implemented.

While noise modeling indicates that construction and operational noise will not be a major issue for the Project, modeling predicted that there may be some exceedences of Project Specific Noise Criteria (PSNC). Additional mitigation measures are not identified to prevent these exceedences.

12 ECOLOGY

In general, an adequate ecological baseline (terrestrial and aquatic) has been provided, however, it lacks detail in regard to threatened species population distribution and abundance estimates.

Ecological surveys should have been conducted over a broader survey area to reflect impacts associated with all project components.

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Offsets required under the EPBC Act threatened species identified within the Project Boundary were not calculated using the new EPBC Act Policy Guidelines of 2012.

13 TRAFFIC AND TRANSPORT

A Rail Study has been conducted as part of the 2013 EIS to address the gaps in information regarding transport impacts identified in the 2010 EIS. This is a more comprehensive assessment of the transport route of the coal.

14 VISUAL AMENITY

The visual assessment conducted for the Project provides a good site analysis and identification of key viewpoints, assessment of potential visual impacts and recommendations for mitigation measures to minimise impacts of the Project.

15 ARCHAEOLOGY AND CULTURAL HERITAGE

In general, a comprehensive survey and report of the Aboriginal cultural and historic heritage of the areas surveyed within the Project Boundary has been prepared apart from some areas with accessibility restrictions.

16 COMMUNITY HEALTH AND SAFETY

Uncertainties and knowledge gaps identified in this report including air and water quality impacts indicate that the assessment of community health and safety impacts and risks and their necessary management and mitigation measures are unlikely to be sufficiently comprehensive.

17 IMPACTS BEYOND DIRECTOR GENERAL'S REQUIREMENTS

Contingency plans for potential disasters, whether naturally occurring or human induced, have not been included in the EIS. This is an oversight.

The Buttonderry Waste Management Facility is mentioned in the EIS in respect to visual amenity, however, the potential environmental risks (gas and leachate leakage) associated with the proximity of this facility to the project are not discussed.

18 MANAGEMENT AND MONITORING

The EIS is not accompanied by management and monitoring plans. It is understood that these have not yet been prepared. Good industry international practice and / or best practice requires an Environmental Management and Monitoring Plan to be prepared as part of the EIS process. Ideally this should be accompanied by a budget indicating that the Project is sufficiently resourced to undertake this work. It is not possible to fully assess the impacts of the Project without an adequately articulated management and monitoring plan.

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Notwithstanding the above it is understood that the latest guidelines provide for Management Plans to be prepared much later in the process.

In recent years a trend has developed for adopting, so-called, Adaptive Management to deal with uncertainties in respect to future impacts on groundwater and surface water systems from mining operations. This developed to the point that adaptive management involved changing the targets that were established in environmental impact statements in response to what actually occurred in the field. This was done in conjunction with the establishment of groundwater monitoring systems and the visual and flow monitoring in creeks and rivers.

The fallacy of this approach was determined by the Land and Environment Court in a recent case (2013) in regard to the proposed expansion of Berrima Colliery. The judges found as follows with respect to Adaptive Management:

Adaptive management regime

The intention of the Water Management Plan is to provide an adaptive management regime, under which management actions would be modified in response to the results of the monitoring program. Preston CJ held that,

“in adaptive management, the goal to be achieved is set, so there is no uncertainty as to the outcome and conditions requiring adaptive management do not lack certainty, but rather they establish a regime which would permit changes, within defined parameters, to the way the outcome is achieved.”

It follows that it is necessary for there to be precise limits imposed on the cumulative operations of the colliery.

The judges went on to quote Judge Preston in a previous case in relation to the need for implementation of the precautionary principle when there is uncertainty in respect to future environmental impacts. They stated:

Preston CJ held in *Telstra* at [150], the following, in regard to the precautionary principle and the shifting of the evidentiary burden of proof:

‘If each of the two conditions precedent or thresholds are satisfied – that is, there is a threat of serious or irreversible environmental damage and there is the requisite degree of scientific uncertainty – the precautionary principle will be activated. At this point, there is a shifting of an evidentiary burden of proof. A decision-maker must assume that the threat of serious or irreversible environmental damage is no longer uncertain but is a reality. The burden of showing that this threat does not in fact exist or is negligible effectively reverts to the proponent of the economic or other development plan, programme or project.’

We are satisfied that the precautionary principle is activated as the risk of significant environmental harm currently remains uncertain,.....

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The judges determined that the proposed expansion of Berrima Colliery should not proceed on the basis of Adaptive Management as was proposed by the colliery owners.

Council considers that the legal findings summarised above should be taken into account in respect to the proposed Wallarah 2 project, because future impacts on groundwater and surface waters are likely to be substantial to both town water supplies in drought periods, and to agriculture and flora and fauna under even average climatic conditions. Furthermore, there are substantial uncertainties in respect to a number of these impacts, making it possible, and even probable that the impacts will be greater than assessed by the EIS.

CONCLUSION


It is considered that the proposal should not be approved for the reasons outlined above, in particular based on the precautionary principle.

In the event, however, that it is intended to progress the application, the matters set out in the attached table need to be addressed.

Further, the following conditions pertaining to Council's water and sewer services should be imposed:

- No disposal of brine or mine water to the sewer
- Connection of potable water to Buttonderry and Tooheys Road sites
- Sewage connection to Buttonderry and Tooheys Road sites
- Connections to be in accordance with Council's requirements.

Yours faithfully



Lin Armstrong
Director
DEVELOPMENT & BUILDING

ATTACHMENT 1

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TABLE 1
GUIDANCE FOR FURTHER ASSESSMENT / VALIDATION AND MONITORING

ITEM / AREA OF UNCERTAINTY	IMPORTANCE (Low, Medium and High)	MEASURES
Subsidence	High	<p>Accurate measurement of surface subsidence is expected to be undertaken by the mine if and when mining occurs. This must be calibrated against an accurate map of conditions prior to mining.</p> <p>The record must also include detailed survey of all properties, infrastructure and structures that may be affected by subsidence along with comprehensive dilapidation assessments.</p> <p>Agreement with all stakeholders and landowners must be gained as to the extent and infrastructure to be assessed for impact due to subsidence.</p>
Subsidence Model	High	<p>A hold point after an agreed number (possibly 5) of longwalls have been extracted and the SCT and MSEC models validated and recalibrated as necessary.</p>
Subsidence – potential variability in modeling results.	Medium	<p>The influence of UCS – Sonic correlation UCS – modulus correlation and stress regime on the prediction of subsidence must be validated – as is proposed by the EIS.</p>
Subsidence – impact of pillar yielding on subsidence and the ability to validate predictions	Medium	<p>A comparison of impacts with and without the influence of pillar yielding. A program of pillar performance measurement including convergence measurements and extensometer readings.</p>
Mine Plan	Medium	<p>It is likely, or even inevitable that the Mine Plan and layout of longwall panels will change during the life of the mine. This is particularly so after the process of validation of the subsidence modeling has been completed following initial mining of the first longwall panels (minimum of 4).</p> <p>Modification to the Mine Plan and longwall panel layout will alter the extent and location of subsidence and the location of impacts on flooding, access routes and stream flows.</p> <p>A clear process must be setout for the assessment and approval of revised mine plans and must include Council. Assessments of the impacts of Mine Plan change include subsidence magnitude and extent, potential impact on groundwater modeling, impact on flooding and stream flows/ponding.</p>

ITEM / AREA OF UNCERTAINTY	IMPORTANCE (Low, Medium and High)	MEASURES
Sampling of rock mass – impacts on groundwater modeling	High	<p>In order to confirm the EIS assumption and reduce uncertainty on the extent and connectivity (tortuous) of the defect system within the "aquatard" which is relied upon in the modeling factual data should be provided. If this data is not available then within the existing mine database, or other sources additional exploration cored boreholes drilled at an angle to the horizontal plane of say 60° should be implemented. Drilling would need to be undertaken in the Dooralong Valley and in the lower reaches of the Yarramalong Valley to target rocks below the alluvial soils. Drill holes to extend to at least the base of the "constrained zone" from subsidence modeling. The location and number of such holes is not recommended here, but should be of sufficient number to provide confidence in the result when used in conjunction with other available data.</p> <p>These angled holes could also be used to undertake further in-situ permeability testing by means such as Packer or Constant Head testing.</p>
Permeability of Patonga Claystone – impacts on groundwater modeling	High	<p>Specific testing of the permeability of the rock mass below the alluvial soils in the valleys be undertaken to confirm EIS assumptions, or otherwise. The assumptions, and hence impacts of the EIS groundwater modeling must be confirmed prior to mining below any alluvial areas.</p> <p>Testing to be in inclined, cored boreholes. Holes must be logged to allow permeability testing to be carefully targeted to allow assessment of vertical and horizontal defects. Possible methods to test the rock mass permeability comprise;</p> <ul style="list-style-type: none"> • Packer testing. • In-situ Constant Head testing. • Full scale in-situ pump testing targeting the impacts of dewatering below the Patonga Claystone formation. We acknowledged that these tests are expensive and time consuming and alternate methods may be appropriate. We recommend the former two methods be employed as a first phase of testing. <p>Testing should comprise a suitable number of locations and successful tests to be meaningful. The final number is likely to be subject to the results of the works at the time. A minimum of 6 test holes is suggested.</p>

ITEM / AREA OF UNCERTAINTY	IMPORTANCE (Low, Medium and High)	MEASURES
Impact on Groundwater Levels	High	<p>Should the mine be approved a comprehensive system and regime of groundwater level monitoring must be implemented.</p> <p>This will require a robust system of new and existing monitoring wells and/or piezometers that are able to survive the predicted subsidence impacts.</p> <p>Monitoring points must be read on a frequent basis and compiled into a central database which is not only open for access by Council, but the data must be reviewed and assessed for its 'meaning' on a regular basis.</p> <p>This system should be augmented by measurement of levels and yields from water bores in the valleys.</p>
Impact on Stream Flows	High	<p>Monitoring of streamflow and inputs that influence alluvial lands water table recharge must be ascertained to allow assessment of the impact of groundwater leakage/loss. Aspects that must be monitored include:</p> <ul style="list-style-type: none"> • Rainfall and runoff across the catchment area for Wyong River and Jiliby Jiliby Creek, • Stream Flows – measured at multiple points along the various streams. As a minimum this must comprise <ul style="list-style-type: none"> ○ Jiliby Jiliby Creek upstream of the mine area, upstream and downstream of the confluence with Little Jiliby Jiliby Creek and just upstream of the confluence with Wyong River. ○ Wyong River upstream of the mine area - say at Duffy's Point, just upstream and downstream of the volcanic intrusion along the southern edge of the mine – say about 500m upstream of Chandlers Creek and about 700/800m upstream of Kidmans Lane, just upstream and downstream of the confluence with Jiliby Jiliby Ck. ○ Little Jiliby Jiliby Creek just upstream of the confluence with Jiliby Jiliby Creek and say just as the creek enters the upper forested area. <p>These points could also be used to monitor water quality as necessary.</p>

ITEM / AREA OF UNCERTAINTY	IMPORTANCE (Low, Medium and High)	MEASURES
Flood Remediation to Access Roads	Medium	<p>The impact of potential remedial works to access roadways must be understood prior to undertaking such works with regard to the impacts on future flood levels. Models for the 1%AEP and 20% AEP must be developed, assessed and agreed.</p> <p>Further, the method and design of remedial works and the maintenance implications for the future must be understood and agreed with Council.</p>
Stream Stability (and ecology)	Medium	<p>Specific and measurable/quantifiable targets must be agreed and established concerning stream stability and the impacts on erosion (as well as flora and fauna) so all parties understand where they stand if the mine is approved.</p> <p>This is particularly so given the very difficult nature of assessment of what is adverse and what is not as a result of the mine.</p>
Risk Assessment	High	<p>A detailed and comprehensive risk assessment must be undertaken to provide a framework against which reasonable adaptive management programmes can be developed, and assessed.</p>
Adaptive Management	High	<p><u>Specific, measurable and agreed</u> targets or levels from monitoring MUST be established prior to any underground works to allow all stakeholders certainty about what the aims of any adaptive management programme are. These should be based on the results of a comprehensive quantitative risk assessment and possibly cost/benefit assessment.</p> <p>Targets may include loss of stream flows, lowering of water levels/pressures in monitoring bores and levels of subsidence.</p> <p>Further, the targets must be accompanied by agreed responses otherwise the management system would be reduced to an impotent and disingenuous process. Agreed responses may be as minor as "continue to monitor / watch" to as strong as "cease mining" or to quarantine sensitive areas from mining.</p> <p>It may be considered that it is not possible to sufficiently confirm through monitoring the level of streamflow loss. In that case it may be that a proportion of the mine inflow water is deemed to be from streams and an agreed method and distribution of this proportion of mine water is treated and repatriated to streams, users/residents and areas of significant flora.</p>

ITEM / AREA OF UNCERTAINTY	IMPORTANCE (Low, Medium and High)	MEASURES
Independent Impact Monitoring Authority	Medium	<p>An independent body be established to install, monitor and maintain all the groundwater, surface water and surface level impacts of the mine both during and after operation – this is particularly so given the EIS stated length of impact on groundwater and uncertainty on the speed with which pillar yield may impact subsidence.</p> <p>This body <u>must</u> be guaranteed funding to not only establish the monitoring system, but to maintain it as the impacts of subsidence and the long mine life will require significant repairs and timely replacement of equipment and monitoring points/instruments. Indeed, replacement of instrument/monitoring points should not take longer than say 2 months to maintain continuity of measurements.</p> <p>It is also recommend the monitoring authority be given either a direct, or at the least oversight role in the assessment of impacts and on the assessment of compensation for damage/loss or the development of remedial works/measures to control/limit the impacts of the mine – judged against the specific targets of the Adaptive Management Plan – and as such must be able to undertake, or direct the mine to undertake additional investigations and/or assessments with regard to subsidence, groundwater and surface water.</p> <p>The records and recommendations of the authority should be available on the public record.</p>

ITEM / AREA OF UNCERTAINTY	IMPORTANCE (Low, Medium and High)	MEASURES
Air Quality	High	Air quality impacts are assessed utilising relevant methodologies to ensure that detailed impact assessments of project phases are conducted effectively.
Greenhouse Gas	Medium	A more realistic assessment of greenhouse gas (GHG) impacts is provided by including Scope 2 and 3 emissions sources in the analysis of the GHG impacts and updating impacts of the Project on anthropogenic global warming.
Water Quality	High	Surface water quality is investigated further to ensure that all sources of contaminants are identified and that water sources are effectively monitored for changes associated with the Project. A geochemical assessment for potential AMD / salinity is conducted, including development of contingency plans for the management and treatment of the Mine Operations Dam.
EPBC Water Amendment	High	The EPBC Act Water Trigger Amendment (2013) is considered by the Proponent.
Ecology	Medium	Further detailed surveys for biodiversity are conducted, including extended flora survey to establish a robust flora baseline for the Subsidence Impact Limit. The Biodiversity Offset Strategy for threatened species is revised to ensure it addresses the current Policy and that currently proposed offsets for fauna habitats are reviewed for suitability.
Mine Design and Layout	Medium	Internal haulage routes are confirmed to allow assessment of potential impacts of heavy vehicle movement.
Stakeholder Engagement	High	A robust Stakeholder Engagement Plan is developed that is inclusive of commitments to ongoing consultation and a structured grievance procedure.
Rehabilitation and Closure	High	A comprehensive Rehabilitation and Closure Plan is prepared.
Risk Assessment and Cost Benefit Analysis	Medium	The Risk Assessment and Cost Benefit Analysis are reviewed and revised based on detailed findings of further recommended work.
Disaster Risk Management	High	A Disaster Risk Management Plan is developed to cover natural and human-induced emergencies associated with the Project. This Plan should be inclusive of specific Contingency Plans to manage particular events, including the management / treatment of the Mine Operations Dam (MOD) and spontaneous combustion.

ATTACHMENT 1

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ITEM / AREA OF UNCERTAINTY	IMPORTANCE (Low, Medium and High)	MEASURES
Community Health and Safety	Medium	<p>The Community Health and Safety assessment is reviewed and revised based on the findings of the further work recommended.</p> <p>Potential impacts upon the Buttonderry Waste Management Facility associated with the development of the Project are fully considered.</p>
Management, Monitoring and Reporting	High	<p>Management and Monitoring Plans are prepared for each aspect of assessment prior to commencement of the Construction phase to clearly outline how impacts will be mitigated and managed.</p> <p>An independent expert is commissioned by the Proponent to conduct Environmental Audits of the project on a regular basis throughout the project life cycle.</p> <p>An Environmental Management System based on ISO14001:2004 'Environmental management systems -- Requirements with guidance for use' is developed and implemented for the Project.</p>



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Our Ref: PSM2015-004R
Date: 21 June 2013

Director
Development and Building
Wyong Shire Council
PO Box 20
WYONG NSW 2259

ATTENTION: LIN ARMSTRONG

Dear Lin,

**RE: CONTRACT NO. CPA/219532 – WALLARAH 2 COAL PROJECT EIS REVIEW
– GROUNDWATER, SURFACE WATER, FLOODING AND SUBSIDENCE
IMPACTS**

Pells Sullivan Meynink (PSM) is pleased to submit our report for the above project.

If you require any further information please contact the undersigned.

For and on behalf of
PELLS SULLIVAN MEYNINK

A handwritten signature in blue ink, appearing to read 'Derek Anderson', is written over a light blue horizontal line.

DEREK ANDERSON

Distribution: Electronic Copy [Wyong Council]
Original held by PSM

Wyong Shire Council

**CONTRACT NO. CPA/219532 – WALLARAH 2 COAL
PROJECT EIS REVIEW**

**GROUNDWATER, SURFACE WATER, FLOODING AND SUBSIDENCE
IMPACTS**

PSM2015-004R June 2013



EXECUTIVE SUMMARY

The following summarises the main findings of the report presented herein. The findings are based on the proposed W2CP underground longwall coal mine which comprises the following:

- Permanent decline access tunnel from Buttonderry site to the mining area.
- Permanent Main Headings between the northern and southern zones of longwall panels and along the north eastern edge of the first longwall panels to be mined.
- Permanent works designed not to collapse or subside.
- A total of 33 longwall panels to be mined over the first 28 years of operation, which on average may be expected to take about a year each to mine.
- Relatively wide, by mining practices chain pillars left between each longwall panel. After coal is extracted from each longwall panel, the rock above the roof of the panel collapses forming the goaf and results in surface subsidence above the mined area. The coal forming the chain pillars is designed to yield and 'soften' the expression of surface subsidence into a more even profile.

It is assumed the reader has a basic knowledge of the layout of the proposed W2CP and a rudimentary understanding of longwall coal mining.

REGULATORY

WACJV has sought Development Consent for the W2CP underground mine under the new Division 4.1 of Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). This Division provides for a new planning assessment and determination regime for State Significant Development in NSW. The earlier submission sought by WACJV in 2010 was undertaken through the now repealed Part 3A of the EP&A Act.

PSM understand that under this Consent application, detailed plans, such as Subsidence Management Plans (SMP's) are not required to be prepared until much later in the approvals process.

With regard to SMP's, a new set of guidelines is currently being prepared by the NSW Department of Trade and Investment, Regional Infrastructure and Services (DTIRIS, 2011 - formerly Department of Primary Industries - Mineral Resources (DPI-MR)) for '*Preparation of a Subsidence Management Plan application where a project approval under the EP&A Act 1979, with an extraction plan condition, is in force*'. However, at this time we understand that the current *Guideline for Applications for Subsidence Management Approvals* (DTIRIS, 2003) remains valid.



SUBSIDENCE

Subsidence is the prime and most readily notable impact of underground longwall mining. The extent and magnitude of subsidence has a controlling influence on potential damage to property and the extent and nature of flooding and movement of surface water.

The prime result of mining are the expected number and severity of impacts across the 245 properties within the area affected by the predicted subsidence, viz:

- 83% of properties being unaffected;
- 12% requiring very minor to minor repair;
- 5% requiring substantial to extensive repair; and
- <0.5% requiring a complete rebuild (ie. about 1 property).

These impacts are based on predictions of subsidence comprising:

- Vertical subsidence up to 2.6m with less subsidence predicted in residential areas to the east and more subsidence within forested areas to the west.
- Tilts up to 15mm/m concentrated above the edges of the panels and over forested areas.
- Tensile strains up to 4mm/m concentrated near the edge of panels. About 99% of these strains are expected to be less than 2.5 mm/m.
- Compressive strains up to 5.5 m/m concentrated about 50m inside the panel edges. About 99% expected to be less than 3.3 mm/m.
- Far field movements up to ~60 mm horizontally at a distance of around 1km from mining diminishing to less than 25 mm at a distance of 2 km.

The subsidence prediction used for W2CP was developed using three key components:

1. The predictive model developed using the empirical Incremental Profile Method (IPM) by the specialist subsidence consultant MSEC;
2. The method used to calibrate the empirical predictive model by the consultant Strata Control Technology (SCT); and
3. Chain pillar performance.

Firstly, the situation at the proposed W2CP is unique in as much as it would be a deep underground coal mine in Newcastle Coal Measures, which have traditionally been mined at relatively shallow depths. It is from these experiences that the IPM has had to draw empirical data from. That is, the experience from shallow underground coal mining in similar geology to the W2CP from the Newcastle Coal fields along with the experience from mining at similar depths to the W2CP from the Southern Coal Fields, which are in a different geological environment.



As a result, the predictions of subsidence by MSEC, based on the empirical IPM approach was calibrated against computer based modelling by SCT and it is the result of this combination of empirical mining experience and computer modelling calibration that forms the prime aspect of the review herein.

In summary we conclude that:

- Based on our discussions with W2CP, we understand that something like 4 to 5 panels would need to be extracted before a full model calibration exercise could be undertaken to assess the validity of the subsidence prediction and modelling undertaken.
- The reliability and accuracy of the SCT method is unknown as
 - There is a reliance on extrapolated inputs to which the method has been shown to be sensitive.
 - The model is calibrated to site-specific data, and not to a small number of measurements from other sites.
 - The sensitivity to most input parameters is not presented.
- Due to the empirical nature of the method the Incremental Profile Method (IPM) is only as reliable as the data to which it is calibrated, in this case the SCT model results. Therefore the reliability and accuracy of the IPM is in doubt.

This is to some extent recognised by MSEC who in the EIS state:

"A thorough calibration... will only be achieved after subsidence monitoring data is obtained and analysed".

- The use of one predictive model to calibrate another is generally unwise and not widely regarded as best practice.
- The IPM is stated as being conservative and likely to over predict impacts. The evidence for this conservatism and the expected magnitude with respect to W2CP are not provided. Indeed all indications are that the model development is centred around matching expected conditions and not exceeding or over-predicting them.
- There is a reliance on pillar compression after extraction resulting in a smoother subsidence profile. However, the basis for this assumption appears to conflict the Geological Report (Appendix G), where significant variation in both roof and floor conditions is expected across the site.
- The EIS acknowledges that pillar compression may not occur but does not quantify the impacts or changes in impact should this not occur.
- First longwall will prove that this pillar compression assumption is valid.
- No less than 3 longwalls (L1N to L3N) and more likely 4 to 5 longwalls are required before the pillar compression theory can be verified.

We accept that these predicted impacts are in agreement with expectations based on measured subsidence impacts elsewhere, and the Newcastle and Southern Coalfields in particular.

We are in general agreement that should the predicted level of subsidence occur, the type distribution and severity of impacts on houses, buildings and infrastructure is likely to be similar to that stated in the EIS.

We do not agree that the prediction represents a conservative estimate of subsidence impacts as all the evidence presented in the EIS suggests the prediction represents the most likely impacts. We consider that the model, calibration and application of the prediction does not provide sufficient guidance as to the sensitivity and reliability of the method and may, therefore, fail the Director General's "reasonable level of confidence" test.

In general we did not find any omissions or evidence to suggest that subsidence due to W2CP is likely to be significantly different to that predicted by the EIS. Our main concern is the lack of certainty around the predictive method and the likely variation in prediction based on observed variations that are already known and potentially those unknown.

GROUNDWATER

The conclusions reached by EIS are primarily the result of the input parameters adopted for their numerical modelling. These input parameters are primarily driven by the unsuitable method by which the makeup of the rock and its defects have been sampled and are not consistent with available data or modelling within the EIS. Further, modelling assumes recharge of the water system based on average climatic conditions.

The EIS implies that water inflow to the mine, of up to 2.5ML/day would largely come from water stored in the ground. However, it avoids the fact that water stored in the ground comes from somewhere, and is currently in equilibrium with natural recharge. A valid way to consider this matter is encapsulated in the following quotation from Dr Rick Evans, principal hydrogeologist of Sinclair Knight Merz, viz:

"There is no free lunch here. It's very simple – every litre of water your pump out of the ground reduces river flow by the same amount".

Australian Financial Review,
24 May 2007

Other points to note are:

- We cannot define precisely what portions of which rivers will be affected by leakage losses from the near surface alluvial lands into the deeper rock mass;
- We cannot say, with confidence, how many years it will take for the impact of underground extraction to reflect in surface flows; and
- The EIS states that the mine will not fully recover groundwater pressures for over 500 years.

These points, combined with the uncertainty on the input parameters to the groundwater modelling there is a high probability that leakage losses from the alluvial lands will impact the surface water. Given the high likelihood or even near certainty that climate impacts



would be sufficiently severe at some point implies that it may affect visible flows for long periods.

On balance, the findings from the EIS are at the least a limited and probably unconservative view of potential impacts. This means that, at present, it is not known with an acceptable level confidence what the likely impacts of the Wallarah 2 longwalls will be on groundwater resources, and on groundwater that feeds into the streams of the Dooralong and Yarramalong Valleys.

FLOODING

The results of the flood assessment appear reasonable given the limits of the prediction of subsidence and can be considered as "best practice".

The discussion on the impacts of the W2CP on flooding are made in relation to the 1% AEP event (1 in 100 year) and would only fully come into effect after mining has been completed. It is important to note that the assessment of flooding is dependent on the expected subsidence and so any change to mine plans, or the prediction of subsidence through any validation process will result in changes to the extent and impact of flooding.

Results of the flood modelling for the 1% AEP flood event indicate that subsidence from the current W2CP mine plan is likely to result in only relatively minor increases in the depth and extent of flooding compared to current, pre-mining estimates with a total of about 35Ha of additional land becoming affected across the whole W2CP area.

The changes to flooding extents will have an adverse effect on up to 10 properties. The impact is assessed to be up to 5% of additional land area inundated for 4 of these Properties and up to 20% of additional land area for the remaining 6 properties.

In terms of impacts on residential dwellings, a total of 5 properties that were not previously impacted by the 1 in 100 year flood level are now impacted by flood water depths of between 4cm and 1.27m above floor level. These are assessed as being Major impacts in the system of 'Flood Impact Categories' adopted by the EIS. In addition to these dwellings, a further one dwelling is Categorised as being subject to a Major Impact, in this case the expected 1 in 100 year flood level increase by up to 41cm above current, pre-mining predictions.

In the moderate flood impact category, a total of 8 dwellings will see a rise in the currently predicted inundation levels due to the 1%AEP event by between 3cm and 17cm. A further 3 dwellings will have the level of clearance, or freeboard between the predicted flood level and dwelling floor level reduced to values of between 4cm and 28cm.

Minor impacts are expected to occur to a total of 10 dwellings and comprise increased levels of flooding above floor level by between 1cm and 4cm and reduced levels of freeboard above flood levels.

Further to the dwellings described above, a total of 14 dwellings are expected to have no significant change in flood impacts while a total of 49 properties will see a slight reduction in flood impacts.



Other impacts of the subsidence on flooding are flood peak flows are anticipated to be slightly reduced with a minor increase in the duration of the peak, although the EIS notes these as being insignificant.

Flooding will impact a total of 30 primary and secondary access roads in the project area. Of these only 6 primary access route low points will be adversely impacted by the mine. Adverse impacts comprise increased duration of flooding of between 1 hour and up to 27 hours. The latter time pertains to the crossing (D50) located toward the southern end of Jilliby Road just north of the intersection with Watagan Forest Drive.

Mitigation of the impacts of flooding can readily be undertaken by the WACJV. Detailed plans for each location and/or dwelling are not provided at this stage of the process and are only required after approval has been given.

At this time, the only indication of the extent of potential mitigation is in relation to the Major and Moderate Impact Categories.

Preliminary descriptions of possible mitigation works presented in the EIS comprise:

- Raising or relocating dwellings;
- Raising Sandra Street to increase the upstream flood retarding storage;
- Construction of grassed earthen levees around dwellings to provide a minimum freeboard of 0.3m; and
- Construction of new replacement dwellings.

The purchase of dwellings is mentioned as an option, but is not linked to any dwellings in the EIS, nor is any mechanism or process for such an option canvassed.

In terms of primary access points, the six adversely affected locations can be raised after subsidence has occurred to mitigate the adverse effect. In some instances, the works may require new culvert works to facilitate passage of flood waters past the obstacles.

Council must be conscious of the longer term maintenance requirements of any mitigation measures.

The discussion on potential flood mitigation measures remain at a feasibility level but are considered appropriate and to constitute "best practice" for this level of appraisal. Detailed assessment will be required if planning approval is given and this must ensure all the Director General's requirements are met.

LOSS OF SURFACE WATER

Loss of surface water from streams in either the Yarramalong and/or the Dooralong Valley will have a direct impact on the availability of water in the Wyong River downstream of the proposed mine which is used as part of the water supply to the Wyong and Gosford Local Government Areas. Further, loss of surface water will also affect businesses such as turf farming and supply of water to local bores.

The assessment of loss of surface water is entirely dependent on the inputs to groundwater modelling and the impacts on groundwater flow by the mine. The EIS concludes that there will be very little impact on leakage from the near surface alluvial lands due to the very low permeability of the rock below the alluvial lands and, that what loss does occur will be readily compensated for by surface recharged.

These statements are based on two assumptions. Firstly, that average climactic conditions prevail and secondly, a favourable view of the permeability of the rock below the alluvial lands. The latter point is discussed above under the topic of groundwater modelling, but suffice to say there is considered to be a high level of uncertainty and a lack of factual evidence to confirm the parameters used.

With regard to the first point above, for the EIS to be relevant, it must also consider the variation in inputs to the surface water supply in extended dry periods. The review in this report considers the flow in Jiliby Jiliby Creek between 1972 and 2013 to illustrate the sensitivity of the stream flow to climate and to small variations in flow volumes, viz:

- The median flow rate in the creek is about 4.5 ML/day,
- Flows of less than 1ML/day occurred for 24% of the time
- Flows of less than 0.1 ML/day for 10% of time.

The predicted water inflow to the mine of up to 2.5ML/day represents more than half of the average flow for Jiliby Jiliby Creek and is greater than the flows recorded for 40% of the time since 1972.

These flows are put into perspective when records of consecutive days, since 1972, where low flows considered. The five longest periods of consecutive days when flow was less than 1 ML/day and 2 ML/day range from 112 up to 190 days. This shows that when dry periods occur, the flow in the creeks can be expected to be at a level that may be readily affected by leakage losses from the alluvial lands.

Further, a review of the climate during this period reveals that while some periods of drought did occur such as the Millennium Drought, it does not include the experience of the more intense droughts of World War 2, and the time of Federation.

PONDING

Current predictions of subsidence indicates three locations where increased bowls of storage in ponds along Jilliby Jilliby Creek (2 No.) and Little Jilliby Jilliby Creek (1 No.) are expected to result in longer and/or more frequent periods of drying downstream and similarly of wetting upstream of the newly created pond.

The expected extent to which the stream and adjacent lands may be impacted upstream and downstream of the pond is difficult to predict, but is not expected to be more than 500m and in all likelihood would be less than say 100m. Given the generally cleared/settled nature of the floodplain areas, the potential for drying conditions to adversely impact native flora and fauna is minimal. Any impacts should be able to be effectively managed with suitable monitoring and timely response in mitigating any adverse effects.

These conditions are expected to prevail until such time as the streams re-establish a continuous stream bed. This is highly likely to occur where the ponds occur in the more silty and sandy alluvial soils along the creeklines, but may be much restricted if the ponds occur in areas of heavy clay. The timeframe for these changes depends on the soil types and also the flow velocity and frequency where the stream is ephemeral.

The potential for ponding in Wyong River is considered negligible under the anticipated subsidence.

Subsidence profiles along the Hue Hue Creek have not been provided and so assessment of impacts of mining have not been made.

BOREFIELDS

Borefields have been developed at Woy Woy, Somersby, Mangrove Creek, Ourimbah and Mardi for use by the CCWC as a drought contingency measure. Of these, only the single, 150m deep bore at Mardi is potentially going to be impacted by the W2CP. This bore is about 3km from the southern extent of the mine.

The Mardi bore is thought to extend into the rock of the Tuggerah Formation, or possibly to the top of the Munmorah Conglomerate. The main coal seam in this location is at a depth of about 450m to 500m.

The EIS predicts piezometric drawdown levels in the location of bore will not occur during the period of mine operations. However, drawdown of up to 5m may occur after a long period of time (500 years after mining).

These predictions appear to assume that nearly all of the water inflow to the mine is from that stored in the ground. Hence the predicted drawdown is expected to represent a worst case. If, as we consider likely, a portion of the water flowing into the mine comes from the alluvial lands above the mine, then the impacts at locations such as the Mardi bore will be less than predicted by the EIS.

EROSION AND ENVIRONMENTAL IMPACT

The EIS notes that there is active erosion occurring along the banks of the Jiliby Jiliby Creek, but also that the impacts of the project on surface water resources can be mitigated through implementation of:

- Property Flood Management Plans a water quality monitoring programme for streams in the W2CP area; and
- A stream stability monitoring and management programme.

As with the subsidence and flooding, the W2CP is not required to prepare detailed management plans at this stage of the process but has included some indication on the approach and works within the specialist reports. Broadly the set of works and frequency suggested is considered appropriate but requires a significant amount of detail to allow any worthwhile appraisal to be undertaken of its likely effectiveness. However, it is not clear whether the approach is to be entirely "reactive" in nature, or whether it will include some form of "pro-active" works.

We recommend that the WACJV should endeavour act to prevent erosion rather than repair it where appropriate, as this would be best practice.

The ability of the mine, locals, Council, or other authority to say what is adverse and what would or could have been expected to occur pre-mining will be virtually impossible to ascertain and so the question is what should be done in terms of mitigation or preventative works. This also impacts on who is responsible for undertaking the works. In order to prevent this, and other similar issues from resulting in futile and circular arguments that result in nothing being achieved or done, specific and measurable/quantifiable targets must be agreed and established so all parties understand where they stand if the mine is approved.

RISK ASSESSMENT AND ADAPTIVE MANAGEMENT

In terms of groundwater impacts and to a lesser extent surface subsidence, the EIS presents an abridged assessment of the potential impacts and hazards posed by the W2CP. This situation arises as the EIS only considers risks that have been modelled by the specialist consultants and is thereby limited by the specialist assumptions and either lack of or limited sensitivity assessments. This is not considered appropriate at this stage of the assessment where transparency as to the entire gamut of potential impacts should be canvassed.

Further, the consequence rankings at the high end of assessment have been combined and limit the risk assessment process by requiring that severe, long term and/or potentially irreversible impacts must also be wide spread to warrant a high ranking.

In order to begin to allow the impacts of the project to be managed via adaptive management, the understanding of the impacts and risks must be robust and comprehensive, and quantitative in nature, not qualitative as is the case here.



The risk assessment should consider the level of risk associated with all aspects of the W2CP, and in particular those that:

- Are associated with a high level of severity in terms of consequence,
- Have a high degree of uncertainty surrounding the assessment/modelling,
- Have consequences that either may not/cannot be able to be remediated, mitigated or managed once they are observed, or
- Represent a significant degree of community concern.

The results of a rigorous, qualitative risk assessment could then be considered with respect to acceptable levels of risk, and/or a cost/benefit assessment. The latter of which may, or course result in high consequence impacts with a low risk and/or cost impact being disregarded in the final assessment of the project. However, as stated above, they all need to be considered and presented so an informed judgement/decision can be made.

In terms of the aspects of the project covered in this report, we would recommend the following be subject to a detailed risk assessment process.

1. Ground Water Impacts – test the sensitivity of the baseflow water losses with respect to hydraulic conductivity, level of subsidence induced by mining and environmental factors such as drought.
2. Subsidence Impacts – test the magnitude and location of subsidence effects with respect to items such as variability of the roof conditions of the mine and strength of pillars.

If the impacts of the mine are to be managed via adaptive management then a risk assessment is essential in order for the process to be:

- i. Correctly focused; and
- ii. Establish realistic and measurable targets.

Following this, and possibly with the assistance of a cost/benefit assessment, for an adaptive management plan to be effective it must be based on targets for monitoring and assessment that are:

- specific;
- measurable; and
- agreed between all parties.

Further, the targets must be accompanied by agreed responses otherwise the management system would be reduced to an impotent and disingenuous process.

Agreed responses may be as minor as "continue to monitor / watch" to potentially quarantining coal below the alluvial areas or even as strong as "cease mining".



MANAGEMENT PLAN DEVELOPMENT/APPROVAL CONDITIONS

Measures to mitigate and/or remediate the impacts of subsidence, increased flooding of dwellings and erosion are discussed in the EIS. However, the discussions are relatively general in nature and can only be considered appropriate for the feasibility stage of the project.

The EIS and regulatory requirements are such that detailed Subsidence Management Plans (SMPs) need only be developed in consultation with landowners, Council and other stakeholders for adversely affected properties and streams after any approval has been granted. This would be expected to invoke the "Adaptive Management" approach for the project, for which there are very significant concerns given the level of uncertainty and lack of a comprehensive risk assessment for all of the possible project impacts.

This report provides guidance on matters such as monitoring, validation and further assessment requirements, particularly in areas where information is unclear or uncertainty on data and/or impacts is high.

The guidance provided is intended for consideration by approving authorities in the assessment of the EIS and, if applicable the setting of conditions for the approval of the W2CP.



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1. INTRODUCTION

The report presented herein provides a review of the Environmental Impact Statement (EIS) prepared by Hansen Bailey on the Wallarah 2 Coal Project (W2CP) for the proponent, Wyong Areas Coal Joint Venture (WACJV).

The review particularly considers specialist reports presented in the Appendices to the EIS in relation to the likely impacts of the proposed longwall coal mine development on:

- ground subsidence
- the groundwater regime
- surface flooding
- the surface water regime

The reader should also be aware of PSM's earlier review (Reference 2) of the proponents original Environmental Assessment (EA) presented in 2010. Parts of that document remain relevant to this assessment as many aspects of the EIS are similar to the EA and are repeated where appropriate.

Further to the above, the findings of the Parliamentary Assessment Committee (PAC) report published November 2010 (Reference 3) and the subsequent assessment and refusal by the NSW Department of Planning (Reference 4) dated March 2011 should be noted. In particular, the Director General (NSW Dept. Planning) reports that:

Recommended conditions presented in the PAC's report rely heavily on an adaptive management approach to impacts from the project, and the development and implementation of a significant list of environmental management plans. Many of these issues have also been raised in public authority submissions, which have suggested an inability to conclusively determine the environmental impacts of the project based on the information provided in the Environmental Assessment.

The Director General also notes that:

The Department accepts that there will always be a level of uncertainty associated with predictive modeling and assessment of large-scale development proposals, and that the adaptive management approach is an effective tool that is used to refine, mitigate and manage the long term impacts of mining in NSW. However, the Department stresses that a reasonable level of confidence around the type and magnitude of likely environmental impacts must be achieved before adaptive management and management plans can be applied.

In scenarios where there is significant uncertainty and/or a substantial consequence arising from the uncertainty, the only responsible practice to assess the impact of the uncertainty is to undertake a detailed risk assessment considering the likelihood of an event as well as the consequences of each scenario.

2. SCOPE OF WORK

The scope of work for this study was set out in our letter PSM2015.002L (March 2013) comprises the assessment of the following.

- i. The impacts of the project and the resultant surface subsidence on surface water and ground water within and adjacent to the mining area.
- ii. The adequacy and accuracy of subsidence predictions.
- iii. Impacts on deep aquifer systems and water table elevations at the ground surface.
- iv. Adequacy of any proposed Groundwater Management Plan and any conditions recommended should development consent be granted for the project.
- v. Contingency plans to manage any release of oxidised metals due to fracturing of drainage lines.
- vi. The adequacy of any measures proposed to manage or mitigate any unwanted or unexpected effects of subsidence under the alluvial floodplain of Jilliby, Jilliby Creek or Little Jilliby Jilliby Creek where new wetlands/depressions are potentially created.
- vii. Adequacy of groundwater monitoring processes.
- viii. Potential loss of water from streams caused by leakage to deeper hard rock systems.
- ix. Confirm whether the EIS provides a comprehensive and technically robust assessment of potential groundwater, surface water, flooding and subsidence impacts from the Project.
- x. Identify any potential important aspects or issues that have not been fully and adequately investigated and assessed.
- xi. Identify areas of uncertainty and further investigations and assessments required prior to Project determination and/or during the construction, operation and closure stages of the Project.
- xii. Assess as far as possible whether the information provided in the EIS has been prepared in a manner consistent with Australian and International standards and best practice guidelines.

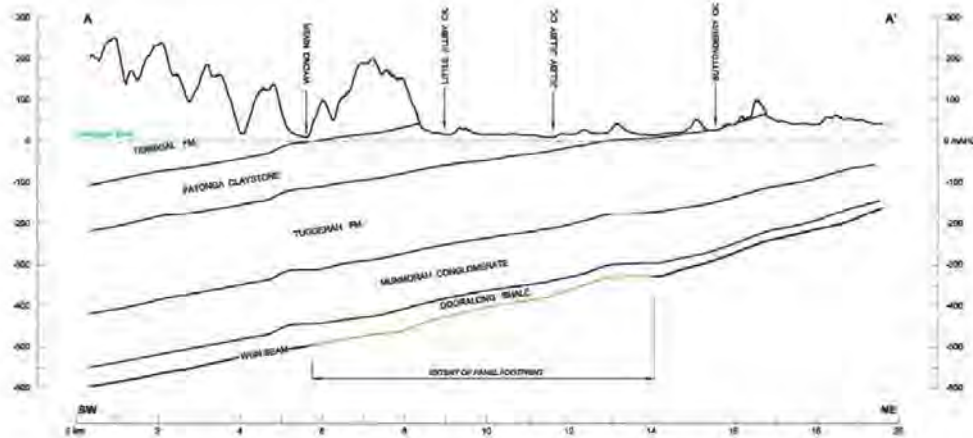


Figure 2: Diagrammatic cross-section of coal seams

Coal is to be removed from the mine via a conveyor in a drift tunnel from the north-east part of the mine (below the Buttonderry Site) to the surface facilities at the Tooheys Road site. From there, the as-mined coal will be transported off site by rail. No washery is required.

4. MINE PLAN

The proposed W2CP mine plan comprises a total of 46 longwall panels of which 33 are proposed to be mined in the first 28 years. Figure 3 shows the proposed layout of the longwall panels.

Mining is to commence at the north-eastern part of the underground workings and extend to the west with the initial mining to be undertaken in the Hue Hue Mine Subsidence District. Figure 4 shows the proposed mining sequence.

The proposed mine plan comprises:

- extracted coal height 3 to 4.5m
- longwall panels widths between
 - 125m wide and 175m at the initial Hue Hue panels
 - 175m and 205m in the floodplain areas
 - up to 255m in the western forested hills
 - longwall panels lengths of between 1.4km and 3.4km
- solid chain pillars of coal left between longwall panels of 45m to 75m width.

Further, while the first 11 longwall panels are being mined, development works for the "permanent" main headings will continue to the west and southwest below the alluvial valleys and Wyong State Forest.



Figure 3: Proposed Mine Layout

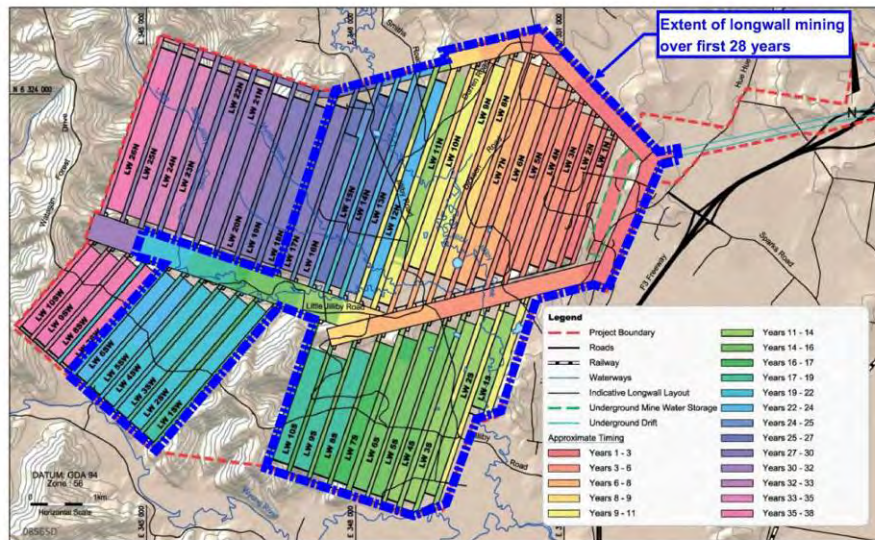


Figure 4: Proposed Mining Sequence

5. REGULATORY

WACJV has sought Development Consent for the W2CP underground mine under the new Division 4.1 of Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). This Division provides for a new planning assessment and determination regime for State Significant Development in NSW. The earlier submission sought by WACJV in 2010 was undertaken through the now repealed Part 3A of the EP&A Act.

PSM understand that under this Consent application, detailed plans such as Subsidence Management Plans (SMP's) are not required to be prepared until much later in the approvals process.

With regard to SMP's, a new set of guidelines is currently being prepared by the NSW Department of Trade and Investment, Regional Infrastructure and Services (DTIRIS, 2011 - formerly Department of Primary Industries - Mineral Resources (DPI-MR)) for *'Preparation of a Subsidence Management Plan application where a project approval under the EP&A Act 1979, with an extraction plan condition, is in force'*. However, at this time we understand that the current *Guideline for Applications for Subsidence Management Approvals* (DTIRIS, 2003) remains valid.

6. RISK ASSESSMENT

Appendix F of the EIS sets out a simplistic risk assessment for the environmental risks associated with the project. In this report, we have focused on the subsidence and in particular groundwater components of that assessment.

The risk assessment presented in Appendix F is based on the framework which is repeated below in Tables 1A to 1C. While this framework appears acceptable, the consequences set out for the natural environment at the higher, or serious end (ranking 1 and 2) appear to limit the ability of the assessment to properly assess the consequences.

This view is based on the fact that the two highest rankings are lumped together and lead the assessment to only consider "widespread and unconfined" impacts. The EIS is unclear if this implies that the potential loss of creek flows in the Dooralong Valley (for example) is, or isn't a widespread or unconfined issue. The end result is that this type and scale of impact has only been given a ranking of 3 in the risk assessment in Appendix F.

Further to the above, the risk assessment is essentially an abridged one in that it only presents scenarios that reflect the assumptions of the specialist studies and consequently inherently reflect the limitations or lack of sensitivity assessment in those studies. These issues are discussed further in the following Sections of this report.



**TABLE 1A
MATRIX FOR ASSESSING LEVEL OF RISK**

Likelihood	Consequence				
	1	2	3	4	5
A	Extreme – 1	Extreme – 2	High – 6	High – 10	Medium – 15
B	Extreme – 3	Extreme – 4	High – 9	Medium – 14	Medium – 19
C	Extreme – 5	High – 8	High – 13	Medium – 18	Low – 22
D	High – 7	High – 12	Medium – 17	Low – 21	Low – 24
E	High – 11	Medium – 16	Medium – 20	Low – 23	Low – 25

**TABLE 1B
LIKELIHOOD SCALE**

Level	Descriptor	Description	Indicative Frequency (expected to occur)
A	Almost certain	The event will occur on an annual basis	Once a year or more frequently
B	Likely	The event has occurred several times or more in your career	Once every three years
C	Possible	The event might occur once in your career	Once every ten years
D	Unlikely	The event does occur somewhere from time to time	Once every thirty years
E	Rare	Heard of something like the event occurring elsewhere	Once every 100 years



**TABLE 1C
CONSEQUENCES SCALE**

Severity Level	Consequences Types				
	Health & Safety	Natural Environment	Social/ Cultural Heritage	Community/Govt/ Reputation/Media	Legal & Regulatory
5	No medical treatment required or requiring first aid treatment at the most	Minor environmental effects (near the source, confined and quick to reverse)	Minor medium-term social impacts on local population. Mostly repairable	Minor, adverse local public or media attention or complaints	Minor legal issues, non-compliances and breaches or regulation. Low potential for impact
4	Objective but reversible disability requiring hospitalisation	Moderate, short-term effects on environment (near the source, reversible and confined)	On-going social issues. Permanent damage to items of cultural significance	Attention from media and/or heightened concern by local community. Criticism by NGOs	
3	Moderate irreversible disability or impairment (>30%) to one or more persons	Serious but confined medium term environmental effects near the source	On-going serious social issues. Significant damage to structures/items of cultural significance	Significant adverse national media/public/NGO attention	Serious breach of regulation with investigation or report to authority with prosecution and/or moderate fine possible
2	Single fatality and/or severe irreversible disability (>30%) to one or more persons	Very serious, long-term environmental impact that is widespread and unconfined, leaves major damage		Serious public or media outcry (international coverage)	Major breach of regulation. Major litigation. High potential for prosecution
1	Multiple fatalities, or significant irreversible effects to >50 persons				Significant prosecution and fines. Very serious litigation including class actions. Suspended or reduced operation

7. SUBSIDENCE PREDICTION

This section contains our view of the accuracy and adequacy of subsidence predictions. It is primarily based on material presented in Appendices G and H and with reference to Appendix C where required. These appendices are:

- Appendix C. Geology Report – prepared by (WACJV)
- Appendix G. Subsidence Modelling Study – prepared by (SCT)
- Appendix H. Subsidence Impact Assessment – prepared by MSEC

Our assessment includes discussion undertaken with W2CP representatives on 17 June 2013 and consideration of the review by B.K Hebblewhite of the work presented in appendices G and H. Reference to additional material used in this review is shown as required.

Predicted Impacts

Predicted impacts are provided in Appendix G and H and summarised as follows:

- Subsidence up to 2.6m with less subsidence predicted in residential areas to the east and more subsidence within forested areas to the west, Figure 5.
- Tilts up to 15mm/m concentrated above the edges of the panels and over forested areas, Figure 6.
- Tensile strains up to 4mm/m concentrated near the edge of panels, Figure 7. About 99% of these strains are expected to be less than 2.5 mm/m, Figure 7.
- Compressive strains up to 5.5 m/m concentrated about 50m inside the panel edges, Figure 8. About 99% expected to be less than 3.3 mm/m.
- Far field movements up to ~60 mm horizontally at a distance of around 1km from mining diminishing to less than 25 mm at a distance of 2 km.

Far field movements are due to regional movement towards mining in response to the 'sag' of the ground due to subsidence. Far field movement is mainly horizontal, directed towards the goaf and diminishes exponentially with distance from mining as shown in Figure 5. Strains are usually relatively small (less than 0.5mm/m) reflecting an *en masse* movement of the ground. Far field movement is difficult to predict and generally undertaken by examining historical data and the distance of mining. The current historical data set used by MSEC to estimate horizontal movement (and provided in Appendix H) is reproduced in Figure 9.

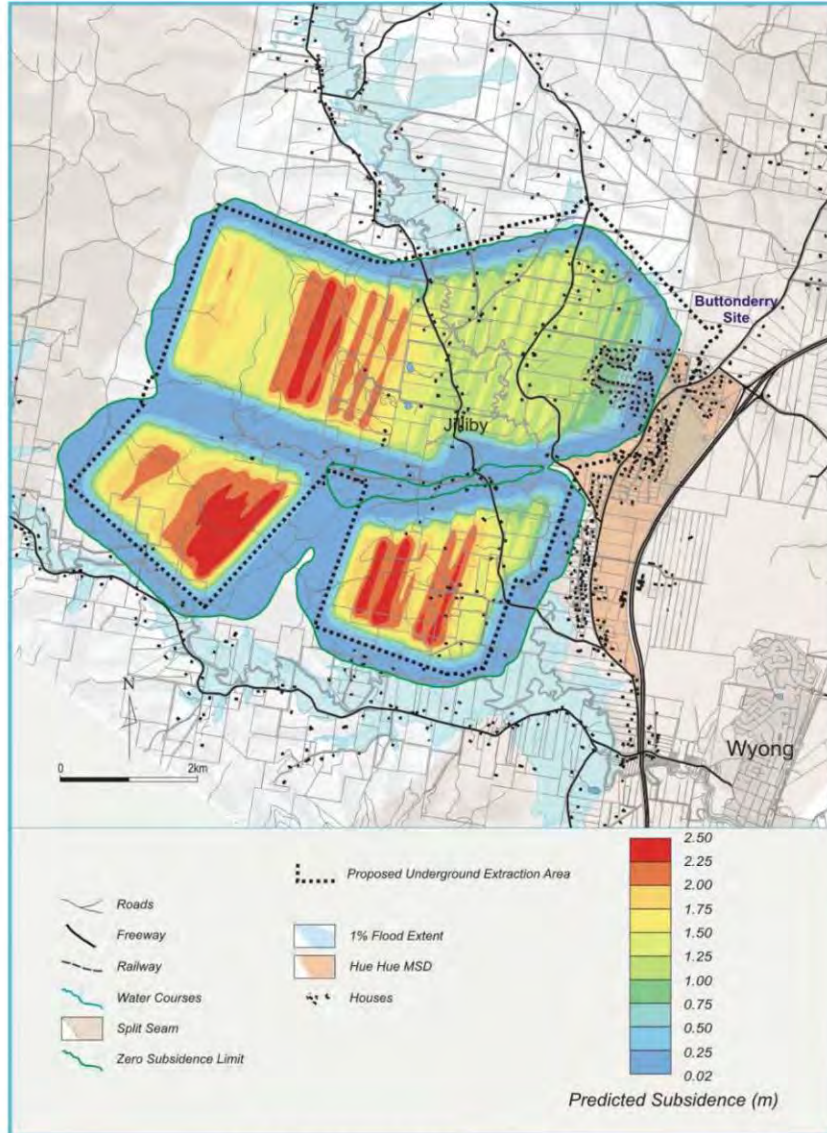


Figure 5: Predicted Total Subsidence Contours

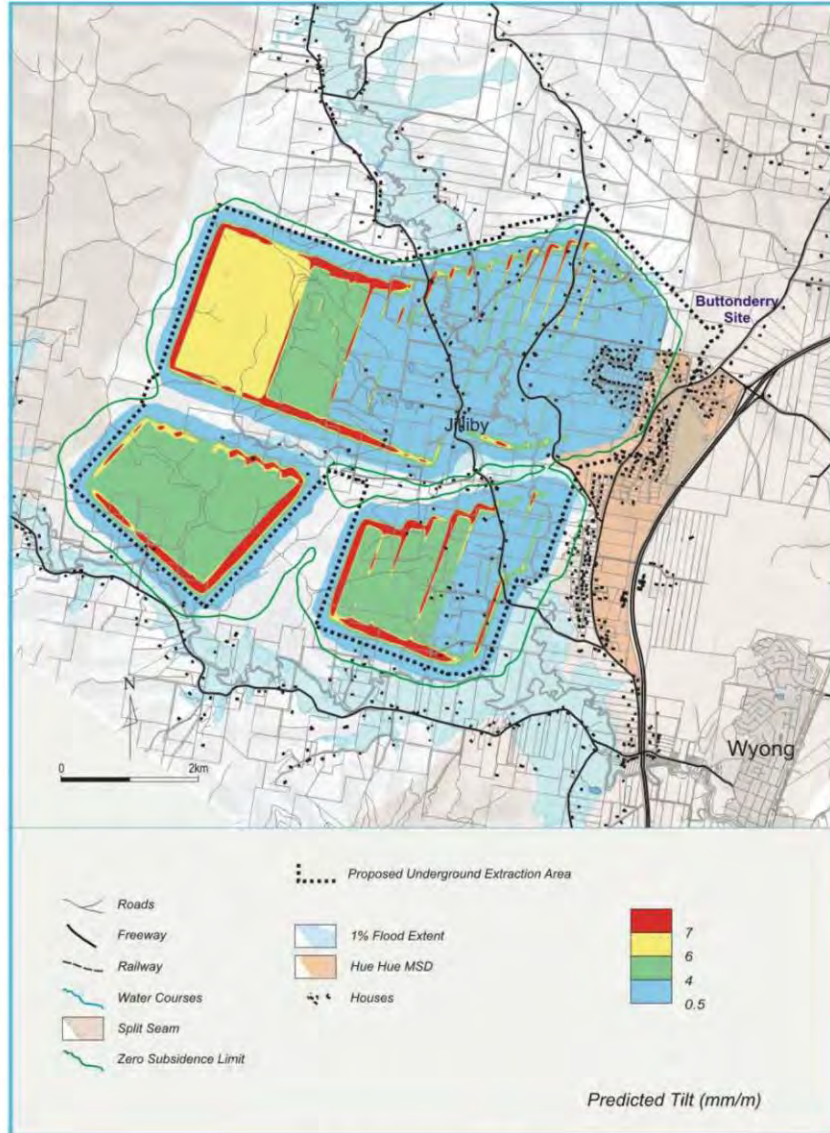


Figure 6: Predicted Total Tilt Contours

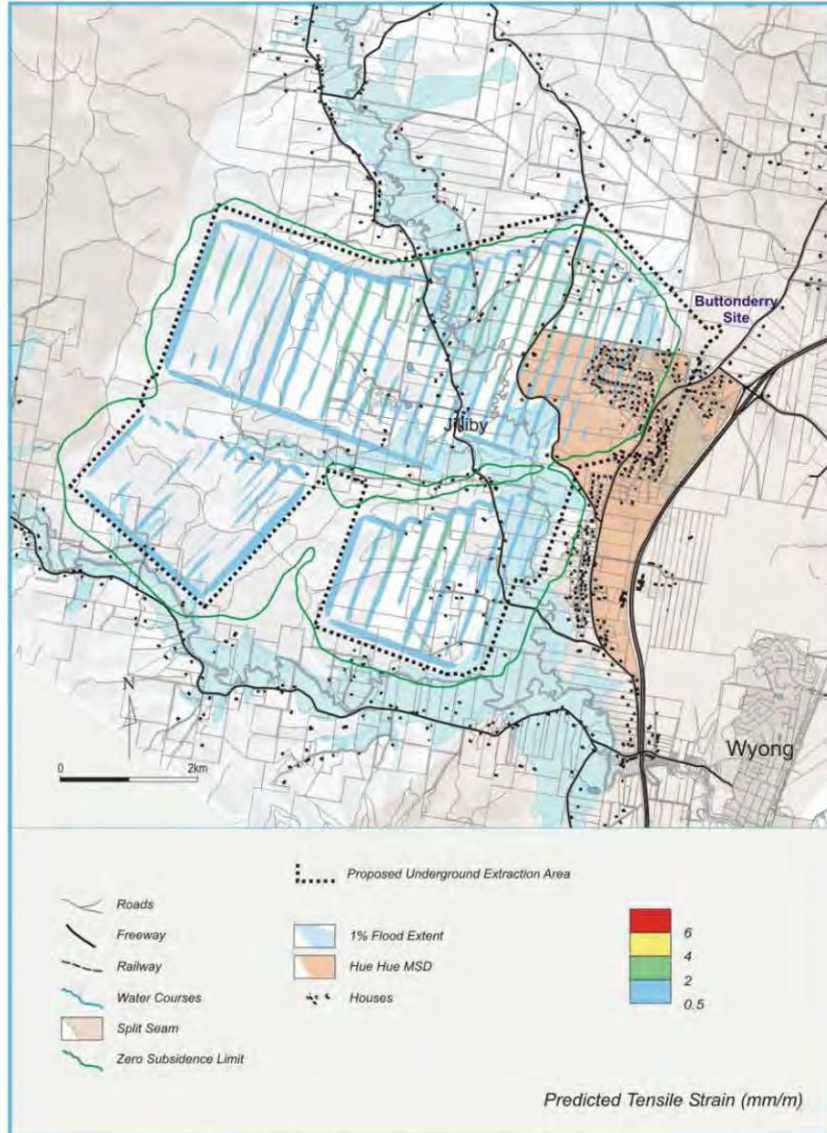


Figure 7: Predicted Total Tensile Strain Contours

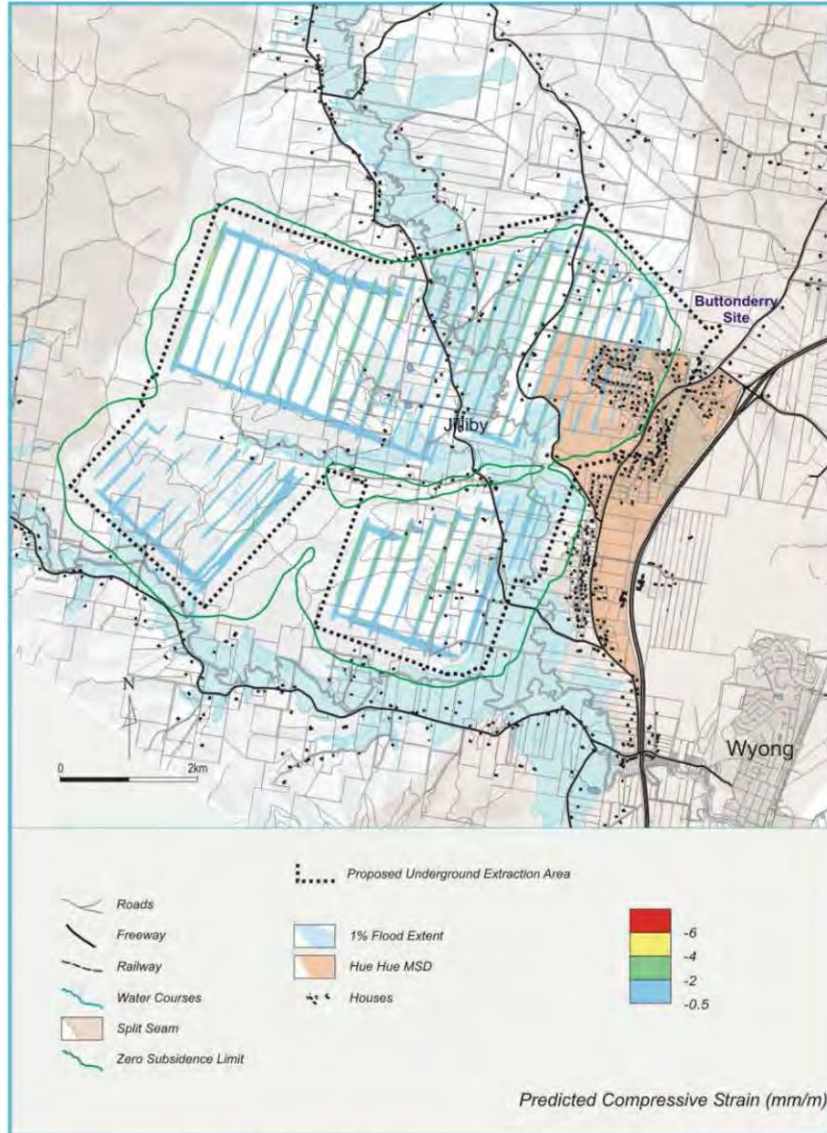


Figure 8: Predicted Total Compressive Strain Contours

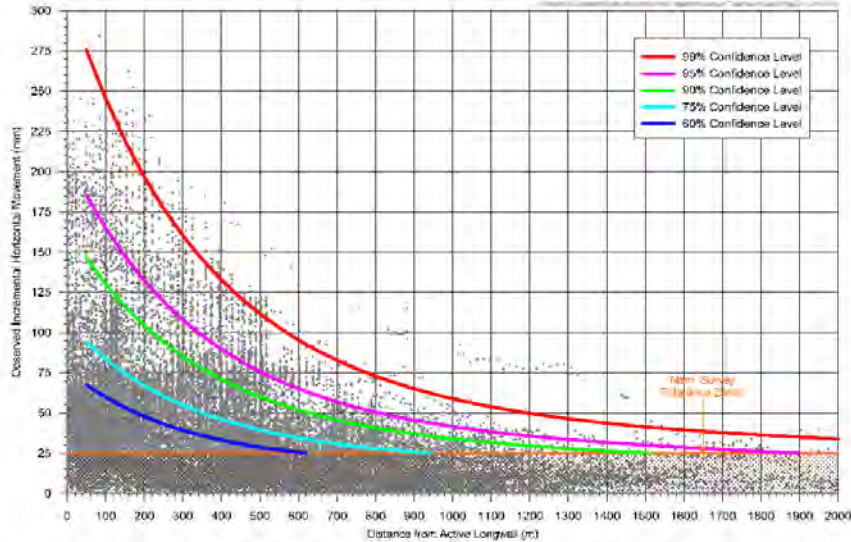


Figure 9: Expected far field horizontal movement based on historical measurements

In terms of impacts, MSEC predictions indicate that of the 245 houses within the study area:

- No houses will exceed the Mine Subsidence Board (MSB) tilt limit of 4mm/m within Hue Hue Mine Subsidence District (MSD).
- Some minor damage is anticipated elsewhere with 13 houses predicted to exceed the MSB tilt limit of 7mm/m within the Wyong MSD.

The expected number and type/extent of repair is shown in Table 2. A summary of impacts expected for other key infrastructure is shown in Table 3.

**TABLE 2
ASSESSED IMPACTS FOR THE HOUSES WITHIN THE SUBSIDENCE AS STATED BY THE EIS**

GROUP	REPAIR CATEGORY			
	NO CLAIM OR ADJUSTMENT	VERY MINOR - MINOR REPAIR	SUBSTANTIAL - EXTENSIVE REPAIR	REBUILD
All houses	202	30	12	≅ 1
(total of 245)	(83%)	(12%)	(5%)	(<0.5%)

MSEC anticipates that modifications to the mine plan may occur prior to the approval and commencement of mining and therefore its predictions are subject to change. Such changes, however, are not anticipated by MSEC to result in significant changes to the number and severity of affected houses as shown in Table 3.

**TABLE 3
SUBSIDENCE EFFECTS SENSITIVITY ANALYSIS AS STATED BY THE EIS**

ASPECT	CONSEQUENCES
Rock formations and steep slopes	The increased tilt is minor compared to the natural gradient and therefore, slope failure is unlikely. Tension cracking on steep slopes may occur, but will still be lower than the cracking observed elsewhere at shallower depths of cover.
Roads	The change in grade is unlikely to significantly affect the drainage of roads. The extent of cracking will increase.
Road bridges	Tilts and curvatures remain very low and are unlikely to cause any impacts. Bridges will need to be able to tolerate the higher valley movements. The movement joints may need to be modified if they cannot withstand the higher closure movements.
Water Infrastructure	Subsidence effects are too low to cause impacts on Treelands Drive Reservoir and pipelines, including Mardi - Mangrove Creek Dam Pipeline.
Transmission lines	Increased stresses on the 330 kV transmission line towers needs to be taken into account when designing mitigation measures for these towers. Subsidence effects are too low to materially impact the 132 kV transmission line. Preventative measures such as roller sheaves and intermediate poles may be necessary.
Telecommunications cables	The maximum tilt increases to 30 mm/m which is unlikely to result in significant impacts to telecommunications cables if suitable management strategies are implemented. The conventional ground strain will increase to 4 mm/m tension and 6 mm/m compression, well below that effectively managed elsewhere.
Rural buildings	Tilts are unlikely to impact the stability and integrity of structures. Increased curvatures will increase the incidence of impacts on structures. However, these impacts will be minor in nature and could be repaired using normal building maintenance techniques
Farm Dams	Change in freeboard will increase to a maximum of 500 mm. This is unlikely to affect dam stability, but may alter the dam storage capacity. Doubling strain and curvature will increase the incidence of cracking in farm dams. Cracking is not expected to be significant and can be repaired where necessary.
Residences	Increased tilts and curvatures will result in a higher incidence of impacts and more significant impacts. Residences are expected to remain safe (i.e. unlikely to experience "sudden and immediate" impacts)
Water Tanks	Increased tilts will result in a higher incidence of serviceability impacts. These can be rectified by re-levelling the tanks. Increased curvatures and strains are unlikely to affect water tanks because they are raised above the ground.
Recreational facilities	There are expected to be 44 pools experiencing tilts greater than 3 mm/m. A number of pools are likely to suffer damage requiring remediation. The maximum tilt experienced by tennis courts is unlikely to affect the serviceability of the courts.

7.1. The Predictive Method Approach

The subsidence prediction used for W2CP may be divided into three key components:

1. The predictive model.
2. The method used to calibrate the predictive model.
3. Chain pillar performance.

A description of each of these components with respect to the Wallarah 2 proposal (W2P) follows.

7.2. The IPM Model

The predictive model employed at W2CP is the Incremental Profile Method (IPM). The IPM is an empirically based method which relies upon the interpolation of a large number of reliable measurements of mine subsidence impacts including subsidence, panel geometry, extraction height, depth of cover and panel sequence amongst others. The means of interpolation is undertaken on an observational basis whereby empirically relationships are derived largely through statistical analysis and not by physical, geological or mechanical means.

When calibrated to reliable measurements relevant to the site to which it is applied, the IPM is generally considered industry best practice. Standard profiles obtained using the MSEC IPM are shown in Figure 10.

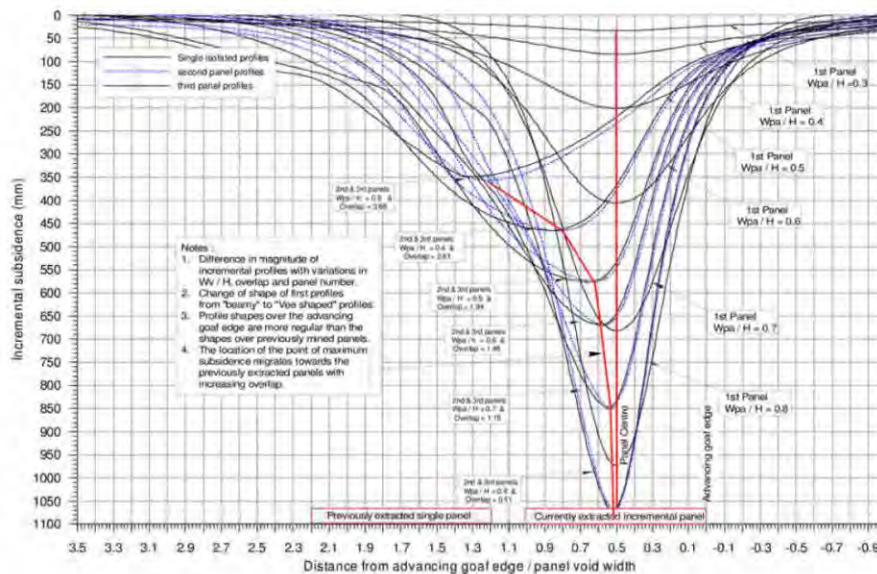


Figure 10: Incremental Subsidence Profiles obtained using the Incremental Profile Method

The accuracy of the IPM depends upon the robustness of the empirical relationships and the quality and suitability of the data. The MSEC (2007) IPM method is known to contain at least 11 parameters which must be derived from a sufficient quantity of data relevant to the site for which the prediction is being undertaken.

The MSEC 'empirical database' typically contains such parameters as:

- Longwall geometry including depth of cover and panel width
- Measured surface response such as subsidence, tilt and strain
- Extraction height, panel sequence and centreline offset distance.

The MSEC IPM does not include consideration of geotechnical or geological parameters such as lithology, strength, joint characteristics and the like. However, if the database is sufficiently large then refinement in terms of region specific response (due to, for example, regional geology) can be incorporated to some extent. The MSEC IPM is known to have a wider application over the Southern Coalfield due to the significantly higher proportion of subsidence impact measurements from this area.

The IPM developed by MSEC is divided into two parts:

1. 'Conventional subsidence' which is that component principally related to longwall geometry and observed subsidence and independent of topography (this has sometimes been referred to previously as 'systematic subsidence')
2. 'Unconventional subsidence' which is that component which appears to be influenced by topographic effects whereby hills valleys cause additional movements, such as a reduction in subsidence (sometimes termed 'upsidence') or additional horizontal movements, such as valley closure.

Unconventional subsidence requires a secondary set of empirical relationships which are commonly related to valley width, valley depth and perpendicular and transverse offsets to mining. MSEC recognises that conventional subsidence is captured more reliably by their IPM than unconventional subsidence.

In many cases the MSEC IPM has been found to reliably predict subsidence which increasing accuracy for sites which correspond to a larger proportion of the empirical database.

There are instances, however, where the IPM has not adequately predicted subsidence. A recent example of this occurred at Tahmoor, NSW in 2008. In this case actual subsidence was approximately twice that predicted by the MSEC IPM, the prediction itself being already considered "conservative". This failure of the IPM occurred despite the mine having its own extensive empirical subsidence database of 23 previous longwall panels and their recorded impacts.

Extensive geomechanical modelling of Tahmoor by SCT (Gale, 2011) examined the sensitivity of subsidence to a range of parameters not included in the IPM, including.

- Unconfined Compressive Strength (UCS)
- In-situ stress
- Bedding and joint density (frequency)
- Joint stiffness
- Joint strength

All of the above were found to have an influence on subsidence to varying degrees. A reasonable fit was eventually confirmed based on significant reductions in joint stiffness and strength. The approach used by Gale (2011) is essentially identical to that used to calibrate the MSEC presented in the EIS in Appendix G and discussed in Section 0.

MSEC have acknowledged in the EIS that their current empirical database is not adequate for W2CP as it does not contain sufficient data to reliably predict the following combination of site conditions.

- Proposed W2CP depths of cover of up to 690 m, which considerably exceeds the depths of cover for most mines in the Newcastle Coalfield and the Southern Coalfield, where depths of cover typically extend up to 550 m.
- The MSEC empirical database is weighted towards the Southern Coalfield with typical extraction thickness of approximately 3.0 m and typically bounded by reasonably strong strata, whereas the W2P includes plans to operate at extraction thicknesses of between 3.0 m and 4.5 m bounded by comparatively weak strata in some areas.
- Geological evidence showing no significant evidence of thick, strong, continuous conglomerate units commonly found in the Newcastle Coalfields and generally considered responsible for a reduction in conventional subsidence
- Geological evidence suggesting a relatively weak roof-pillar-system compared to that in the Southern Coalfields.

In response to the above MSEC has undertaken an alternative means of IPM calibration as described below.

7.3. The IPM Calibration Method

WACJV commissioned SCT to undertake a series of numerical analyses to predict subsidence at specified locations. The studies were based on stress analysis techniques to predict the geo-mechanical behaviour as selected locations based on the following:

- The strata was idealised as a series of horizontal layers in 2D section based on logging and testing of a few (three) select boreholes
- Strength variation across the sites was inferred from sonic velocity correlated to UCS measured in these boreholes.
- In-situ stress and elastic modulus were estimated by generic specific correlations with UCS.
- The section was discretised into 1 m by 1 m regions within which constant conditions are assumed such as strength.
- Numerical analysis techniques were then used to predict the responses of the 2D section to changes, namely the simulated extraction of coal at the target depth.

The theoretical response is understood to be dictated in part by the geotechnical models used in the finite difference analysis package, FLAC, augmented by changes developed by SCT. We understand that this model process is identical to that presented by Gale (2011) with modification based on site specific measurements of material properties, insitu stress and geometry.

The model is shown to reasonably predict the measured surface and subsurface displacement at Ellalong longwall 2 and surface displacement at South Bulli, Appendix H. Both of these cases present different longwall depth, geometry and geology to proposed mining.

Three site specific realisations of their model are presented by SCT for predictive purposes. There are:

- The 'Hue Hue' Road case representing 125m and 155m wide panels below the Hue Hue Mine Subsidence District.
- The 'Valley' case representing 175m wide below the Dooralong Valley.
- The 'Forest' case representing 255m panels below the Jilliby State Conservation Area.

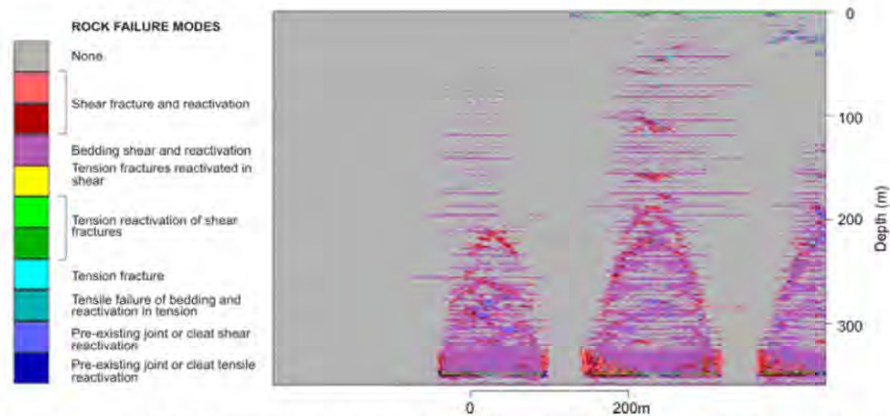


Figure 11: Modelled Rock Fracture Development for the Hue Hue Case (3m extraction)

The SCT model is complex and information provided in the EIS is limited. A more comprehensive description of the SCT model is available in (Gale, 2011) where it was used to predict excessive subsidence experiences at Tahmoor Colliery. Results from Gale (2011) show that:

- SCT Model results can be influenced by strength, lithology, horizontal stress, variations in the frequency of bedding and jointing, joint stiffness and joint friction.
- In some cases variation of these impacts can result in a subsidence prediction varying by a factor of 2.

This discussion is not meant to imply that actual subsidence at W2CP will be or is likely to be twice that predicted. However this study does indicate that the SCT model is sensitive to a significant number of input parameters. Therefore the SCT model is likely to be sensitive to the correlations used in EIS modelling, such as the sonic velocity-UCS correlation, and the other site correlations, such as Young's Modulus and in-situ stress. The sensitivity of these parameters has not been reported in the EIS and therefore the potential error of the SCT model, and by implication the IPM, is unknown.

Additional limitations include:

- SCT models are 2D representations and therefore do not capture the 3D effects of topography, in-situ stress, pillar shape or changes in material properties.
- The models are based on extrapolation of a limited number of UCS tests (3 boreholes), inferred in-situ stress direction and site-wide correlations of Young's Modulus and in-situ stress magnitude.
- The models are based on simplified failure criteria based on a constant proportion of inferred UCS.
- The models do not provide estimates of sensitivity to input parameters at W2CP apart from two additional analyses to examine concurrent changes to extraction height and pillar width.

These limitations are to some extent acknowledged by SCT who state within the EIS:

- "Numerical modelling is site specific and, in itself, cannot generate subsidence predictions across the entire mining area".
- "The use of a low friction angle and adoption of yield pillar design.... does not account for all potential long-term moisture impacts".
- "In the unlikely event that evidence of non-yielding was to emerge, additional modelling and impact assessment would be carried out and appropriate remediation measures put in place".

7.4. Chain Pillar Performance

Based on geological evidence and geometric considerations MSEC considers the following site specific factors to be significant with respect to subsidence prediction:

- The variation and magnitude of the depth of cover.
- The height of extraction.
- The variation in strength of the units bounding the target seam.

Individually the seam height and variation in depth of cover do not present significant challenges in terms of subsidence prediction. However the variation in strength in combination with these factors does present some potential issues.

The design philosophy as presented by MSEC, SCT and the EIS generally is an expectation that the chain pillars will fail increasing overlying subsidence and presumably locally reducing associated tilts and strains.

This assumption is based on:

- The interpreted strengths within boreholes as documented in the Geology Report (Figures 10.1 and 10.2 of Appendix C)
- Estimation of pillar strength using the empirical Mark-Bieniawski (1995) method.
- An assumed reduction in pillar area due to an expectation of yield, stress fracturing and caving in the vicinity of the pillar
- An assumed pyramid shaped stress distribution around the yielded pillar.
- Modifications to the SCT 2D model to capture 3D behaviour due to "cut throughs" through pillars.

These assumptions are generally referred to 'worst case' conditions and have been used to set mine plan geometry such that all pillars would be expected to 'fail' sometime after one, two and three longwalls have been extracted, depending on location. Failure was confirmed in all three SCT site specific numerical predictions and the MSEC IPM was subsequently calibrated to mimic this response in terms of the magnitude of additional subsidence over pillars and the timing with respect to number of longwalls extracted.

The current subsidence prediction, therefore, is reliant upon pillar collapse which may or may not represent 'worst-case' conditions in terms of tilt and strain. In fact pillar failure may not occur in many areas due to better than 'worst case' conditions as evidenced by:

- Predicted variation in roof conditions ranging from an expectation of "compressive failure in both primary and secondary roof" to "no compressive failure" as shown in the Geological Report Figure 10.1 (Appendix C).
- Predicted variation in floor conditions ranging from a UCS of less than 15MPa to greater than 40 MPa, as shown in Geological Report Figure 10.2 (Appendix C).

The approach taken has, in effect, used an empirical predictive tool (the IPM) to extrapolate the results from three theoretical idealised profiles across the entire site. Given that the SCT model has been shown to be sensitive to many of input parameters and that these parameters have been estimated, the lack of information concerning the sensitivity of this approach is therefore of significant concern.

It is noted that concern over the likely impacts should the chain pillars not collapse is raised by both the PAC (Reference 3) and Dr Bruce Hebblewhite.

7.5. Management Strategy

The current management strategy is understood to encompass an "adaptive management plan" comprising:

- Undertake an initial stage of mining where a limited (one or two) number of longwalls are extracted in the north-east of the site in the first instance.
- Conduct a variety of survey and monitoring exercises to collect relevant and sufficient data to enable the IPM and SCT models to be verified.
- Consider changes to the mine plan to mitigate any issues arising from survey or model verification.

There are several potential issues associated with this approach, namely:

- The type and extent of survey must be sufficient to clearly measure the extent and nature of mining induced impacts including pillar stability changes in permeability, rate of subsidence development and height and extent of fracturing.
- The first longwalls may or may not be a reliable indicator of future longwall performance as they with lower extraction height and therefore may not initiate pillar yield as predicted. This would make model calibration difficult as the conditions under where pillar yield will occur may remain unknown.
- Some monitoring elements, such as groundwater wells, may be subject to external influences (such as abstraction) making interpretation of mining influence difficult to substantiate.

7.6. Findings

The predicted impacts due to W2CP are, in general terms:

- Subsidence up to 2.6m with less subsidence predicted in residential areas to the east and more subsidence within forested areas to the west, Figure 5.
- Tilts up to 15mm/m concentrated above the edges of the panels and over forested areas, Figure 6.
- Tensile strains up to 4mm/m concentrated near the edge of panels, Figure 7. About 99% of these strains are expected to be less than 2.5 mm/m, Figure 7.
- Compressive strains up to 5.5 m/m concentrated about 50m inside the panel edges, Figure 8. About 99% expected to be less than 3.3 mm/m.
- Far field movements up to ~60 mm horizontally at a distance of around 1km from mining diminishing to less than 25 mm at a distance of 2 km.
- The expected number and severity of impacts across the 245 properties within the area affected by the predicted subsidence are:
 - 83% of properties being unaffected;
 - 12% requiring very minor to minor repair;
 - 5% requiring substantial to extensive repair, and
 - <0.5% requiring a complete rebuild (ie. about 1 property)

In summary we conclude that:

- Based on our discussions with W2CP, we understand that something like 4 to 5 panels would need to be extracted before a full model calibration exercise could be undertaken.
- The reliability and accuracy of the SCT method is unknown as:
 - There is a reliance on extrapolated inputs to which the method has been shown to be sensitive.
 - The model is calibrated to site-specific data and not to a small number of measurements from other sites.
 - The sensitivity to most input parameters is not presented.
- Due to the empirical nature of the method the IPM is only as reliable as the data to which is it calibrated, in this case the SCT model results. Therefore the reliability and accuracy of the IPM is in doubt. This is to some extent recognised by MSEC who in the EIS state:

"A thorough calibration... will only be achieved after subsidence monitoring data is obtained and analysed"
- The use of one predictive model to calibrate another is generally unwise and not widely regarded as best practice.

- The IPM is stated as being conservative and likely to over predict impacts. The evidence for this conservatism and the expected magnitude with respect to W2CP are not provided. Indeed all indications are that the model development is centred around matching expected conditions and not exceeding or over-predicting them.
- There is a reliance on pillar compression after extraction resulting in a smoother subsidence profile. However, the basis for this assumption appears to conflict the Geological Report (Appendix C), where significant variation in both roof and floor conditions is expected across the site.
- The EIS acknowledges that pillar compression may not occur but does not quantify the impacts or changes in impact should this not occur.
- First longwall will prove that this pillar compression assumption is valid.
- At least 3 longwalls (L1N to L3N) and more likely 4 to 5 longwalls are required before pillar compression theory can be verified.

We accept that these predicted impacts are in agreement with expectations based on measured subsidence impacts elsewhere, and the Newcastle and Southern Coalfields in particular.

We are in general agreement that should the predicted level of subsidence occur, the type distribution and severity of impacts on houses, buildings and infrastructure is likely to be similar to that stated in the EIS.

We do not agree that the prediction represents a conservative estimate of subsidence impacts as all the evidence presented in the EIS suggests the prediction represents the most likely impacts. We consider that the model, calibration and application of the prediction does not provide sufficient guidance as to the sensitivity and reliability of the method and may, therefore, fail the Director General's "reasonable level of confidence" test.

In general we did not find any omissions or evidence to suggest that subsidence due to W2CP is likely to be significantly different to that predicted by the EIS. Our main concern is the lack of certainty around the predictive method and the likely variation in prediction based on observed variations that are already known and potentially those unknown.

8. GROUND & SURFACE WATER

8.1. Introduction

The potential impacts on groundwater and surface water resources arising from the proposed Wallarah 2 longwall coal mine are considered in this section of the report. The assessment is based substantially on material presented in Appendices of the Wallarah 2 EIS, these being:

- Appendix H: Groundwater Management Studies
- Appendix I: Surface Water Impact Assessment

The assessment considers the methodology and inputs into the groundwater model undertaken by Mackie Environmental Research (MER) reported in Appendix H.

The prime outputs of the groundwater modelling pertain to the following:

1. The rate at which water flows into the mine, which the miners then have to deal with.
2. The impact of the mine on groundwater levels.

Point 2 above has particular relevance for the local area in regard to water levels in the Yarralong and Dooralong Valleys and the availability of water in the Wyong River downstream of the proposed mine which is used as part of the water supply to the Wyong and Gosford Local Government Areas. The water intake point on the Wyong River is managed by the Central Coast Water Corporation (CCWC).

Further, activities in both of the valleys such as turf farming and equestrian properties rely on water supply from the local groundwater systems either by collecting the water in dam and/or pumping water from bores.

8.2. The critical importance of extreme events in relation to water resources

8.2.1. Overview

Firstly, we note that the assessments in the Wallarah 2 EIS in relation to groundwater impacts are made in relation to average rainfall conditions, and the same is true for some of the critical assessments in relation to surface waters. Such assessment in terms of averages warrants very careful consideration. This is particularly so given recent experience on the Central Coast where significant water restrictions were in force.

To that end, the groundwater assessment should consider the variation in inputs to the surface water supply to account for extended dry periods. This is particularly so given that if the EIS prediction of leakage from the alluvial lands is negligible given the recharge from runoff. To illustrate this, the following discussion on the Jiliby Jiliby Creek flows is presented.

8.2.2. The Mine and Jilliby Jilliby Creek Catchment

Figure 12 shows the catchment of Jilliby Jilliby Creek in the Dooralong Valley in relation to the mine footprint. It clearly shows that this catchment is the one most vulnerable to mine impacts.

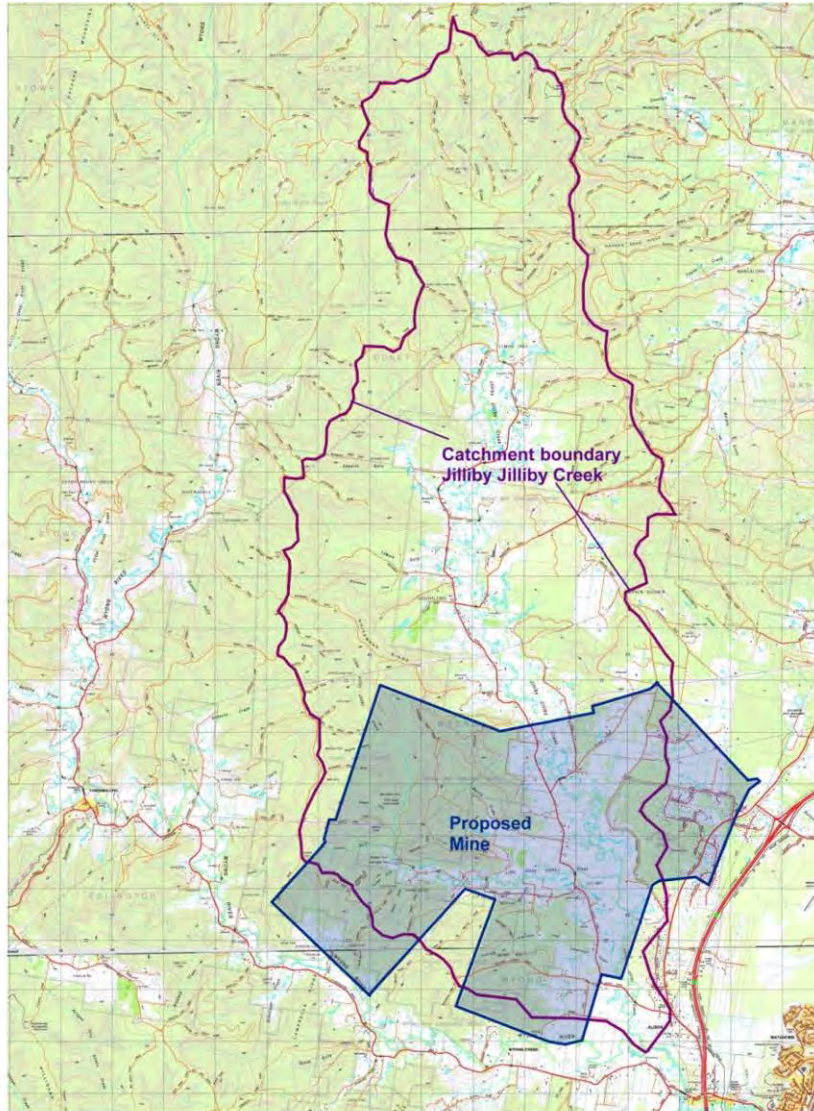


Figure 12: Jilliby Jilliby catchment complete

One of the facets of this catchment is that just downstream of where it joins the Wyong River is the main pump station from which water is pumped to either Mardi Dam or Mangrove Creek Dam (see Figure 13B). Pumping rates over the past few years are shown in Figure 13A.

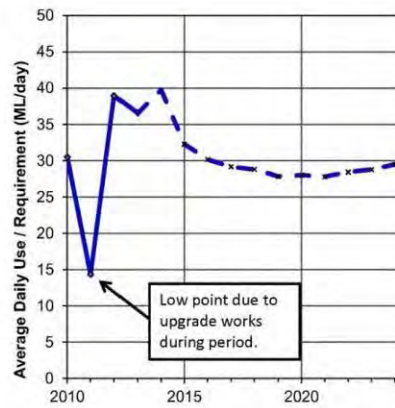


Figure 13A: Pumping rates from Wyong River since 2010 (and projected requirements)

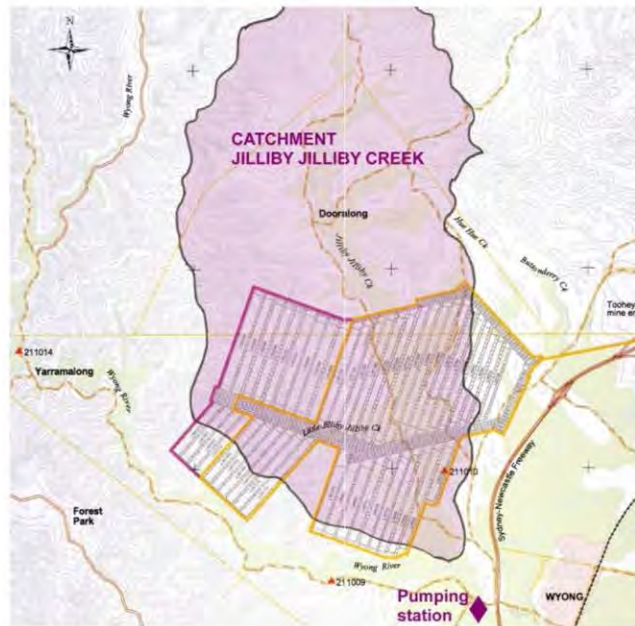


Figure 13B: Location of Wyong River pumping station downstream of confluence of Jiliby Jiliby Creek

8.2.3. Recent Creek Flows

Figure 14 gives the statistical analyses of the flows in Jilliby Jilliby Creek, upstream of the Wyong River, from records since 1972.

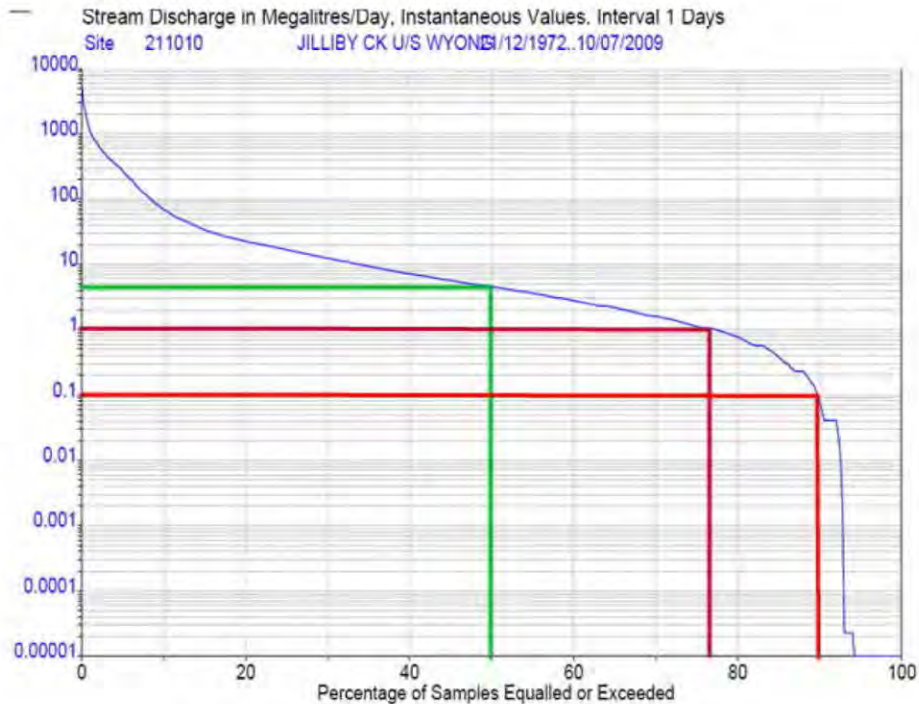


Figure 14: Statistics of flows in Jilliby Jilliby Creek, 1972 – 2013

From the plot above it can be seen that the median flow rate is about 4.5 Megalitres per day (ML/day). However, the flow is less than 1ML/day for 24% of the time of record, and less than 0.1 ML/day for 10% of time.

To put these flow rates into perspective, Figure 15 and Table 4 show that the five longest periods of consecutive days, since 1972, when flows were less than 1 ML/day and 2 ML/day since 1972. It can be seen that for a stretch of 190 days in 1980/81, flows were less than 2ML/day (less than half the average). Sustained periods of flows of less than 2ML/day also occurred for periods of 179, 168, 167 and 135 days. All of these occurred between 1991 and 2006.

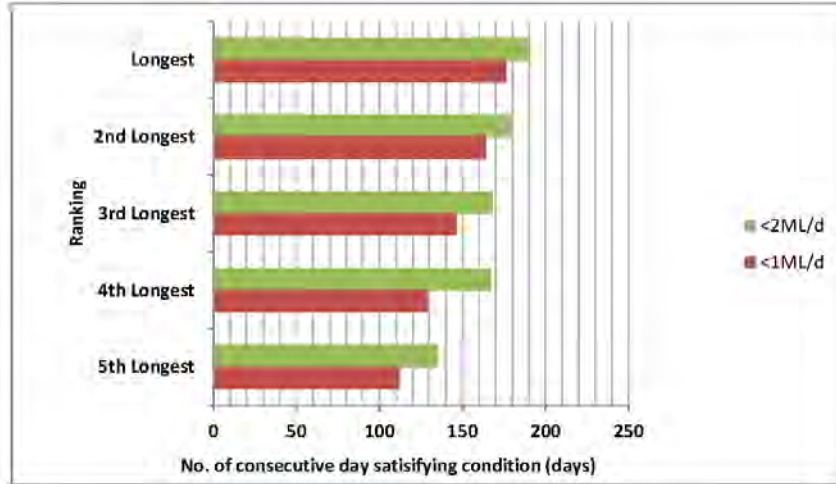


Figure 15: Consecutive days of flow in Jilliby Creek less than either 1ML or 2ML per day

The particular periods that are plotted in Figure 15 are summarised in Table 4 below.

**TABLE 4
CONSECUTIVE DAYS OF LOW FLOW**

RANK	FLOW CONDITION (ML/day)	DAYS	START DATE	END DATE
1	<2	190	31/07/1980	5/02/1981
	<1	176	12/03/2006	3/09/2006
2	<2	179	10/03/2006	4/09/2006
	<1	164	19/10/1997	31/03/1998
3	<2	168	17/04/2004	1/10/2004
	<1	146	8/08/1980	31/12/1980
4	<2	167	17/10/1997	1/04/1998
	<1	129	30/01/1991	7/06/1991
5	<2	135	25/01/1991	8/06/1991
	<1	112	25/11/1982	16/03/1983

8.2.4. Climate

Following from the discussion above, the next important questions are:

- what were the climatic conditions at the time when these sustained periods of low flow occurred; and
- how representative of the full record of local experience area are they?

While the flow records for Jilliby Jilliby Creek from 1972 to now capture the Millennium Drought, they do not capture the more intense droughts of World War 2, and the time of Federation. Figure 16, taken from Appendix H of the EIS, clearly shows how much more severe was the drought of WW2. This means that Figure 16, in all likelihood, does not capture the largest periods for which low flows occurred in the creek. Further, it shows that even short, but intense dry periods such as 1979 to 1981 can significantly impact on the stream flow.

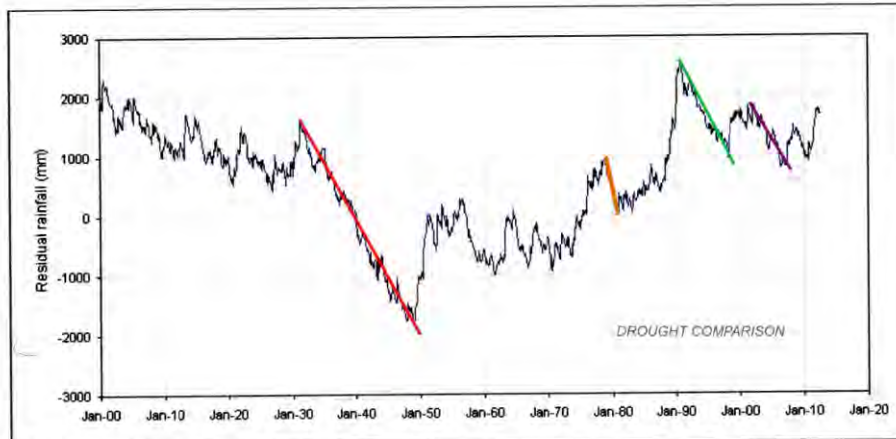


Figure A1: Rainfall residual mass plot for Wye Gauge 061082 from 1900

Figure 16: Droughts in Wyong are shown by 113 years of rainfall records at Wye. Downward slopes are periods of below average rain; the steeper the slope the more intense the drought; the longer the downward sloping period the longer the drought.

8.3. Computed Impacts in the EIS on Groundwater and Surface Water

8.3.1. Surface Water Impacts

Based on the 3D groundwater model, the EIS predicts mine inflows as given in Figure 17.

It can be seen that computed inflows reach about 1.5ML/day in Year 6 and are up to 2.5ML/day for 15 to 20 years after about Year 18. The EIS also notes that these calculations do not include flows from fracture zones which are estimated to potentially increase inflows by about 0.5ML/day.

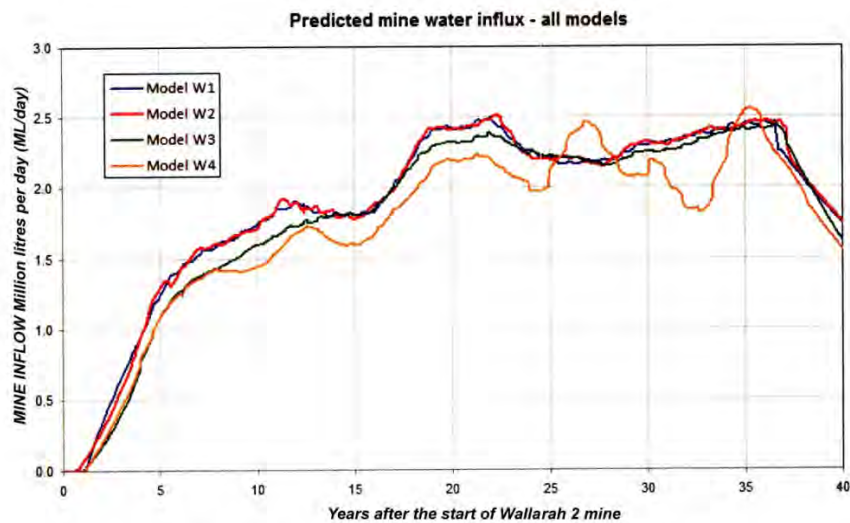


Figure 17: Computed mine inflows as given in the EIS

The EIS does not provide any attempt to reconcile where this water comes from. It implies that it would largely come from water stored in the ground, but this avoids the fact that water stored in the ground comes from somewhere, and is in equilibrium with natural recharge. A valid way to consider this matter is encapsulated in the following quotation from Dr Rick Evans, principal hydrogeologist of Sinclair Knight Merz, viz:

"There is no free lunch here. It's very simple – every litre of water your pump out of the ground reduces river flow by the same amount".

Australian Financial Review,
24 May 2007

While we cannot define precisely what portions of which rivers will be affected, by virtue of Figure 12, it is reasonable to conclude that Jilliby Jilliby Creek is likely to be the dominantly affected stream system. We also cannot say, with confidence, how many years it will take for the impact of underground extraction to reflect in surface flows.

However, it is not a question of if it will occur, it is only a question of how long will it take for the impact to occur. The rate of leakage may be slow if the EIS estimates of Patonga Claystone permeability are correct but much faster if, as discussed in Section 8.9, they are not.

It is valid to compare the data in Figure 16 with the flow records of Jilliby Jilliby Creek.

It is readily seen that 2.5ML/day of mine inflow is more than half the average flow of Jilliby Jilliby Creek and is greater than the flows recorded for 40% of the time since 1972. It is reasonable to assume that the periods of low flow in the creek (see Figure 14) may be longer in future under climatic conditions similar to those experienced since 1972.

This matter of overall water balance is incorrectly addressed in the EIS. On page 86 of Appendix I is the misleading statement that:

"It is possible that undermining of Jilliby Jilliby Creek may generate some additional groundwater storage which would be sourced from regional rainfall recharge, as well as surface runoff. The diverted water volume would represent less than 1% of the total licensed extraction volume for the area."

The inference from this statement is that the flow loss in Jilliby Jilliby Creek is of no consequence. But page (iii) of the same Appendix states that the flow loss may be 0.74 ML/day¹.

For 20% of the time since 1972, the flows in Jilliby Jilliby Creek have been less than 0.74ML/day and that a loss of this magnitude will substantially change the low flow characteristics of Jilliby Jilliby Creek. As discussed below, this will be associated with a substantial change to the groundwater system in Dooralong Valley.

A similar level of baseflow loss was also reported in Section 5.4 of the PAC report (Reference 3) when some cognisance was given to the sensitivity of the modelling to variation in the permeability of the rock mass. In this case a value of 1ML/day was found which represents 24% of the flow record since 1972.

¹ The document states 270ML per year, which is 0.74ML/day.

8.3.2. Groundwater Impacts

Figure E17 of Appendix H of the EIS gives calculations of the groundwater pressure regime around the mine under natural conditions, at the end of mining (Year 38). In this form the plots do not provide guidance on near surface flow lines that illustrate the flow path. The discussion and figures below set out to present the data from the EIS in a practical form to illustrate the impact of creating a groundwater sink in the form of the underground mine.

Figure 18 is an annotated version of part of the EIS plot of natural groundwater conditions above the mining area. To interpret the plot 'equipotential lines' have been annotated onto the EIS data. Equipotential lines indicate the level the water in a well will rise to which on the Figures below is benchmarked against the height above sea level (AHD). So in the case below the equipotential lines show the level water would rise to in a well open only at the bottom, whose bottom is placed on that equipotential line.

Three imaginary wells have also been annotated onto the two figures below, Wells A, B and C. These have been selected to illustrate the results of the MER modelling on the level of water that would appear in a very deep, a mid-range and a shallow bores in the Dooralong Valley.

The water level in the well is shown by the blue column for each well. It can be seen that the two wells (B and C) on the 20m equipotential line rise to the same level, namely RL20 m.

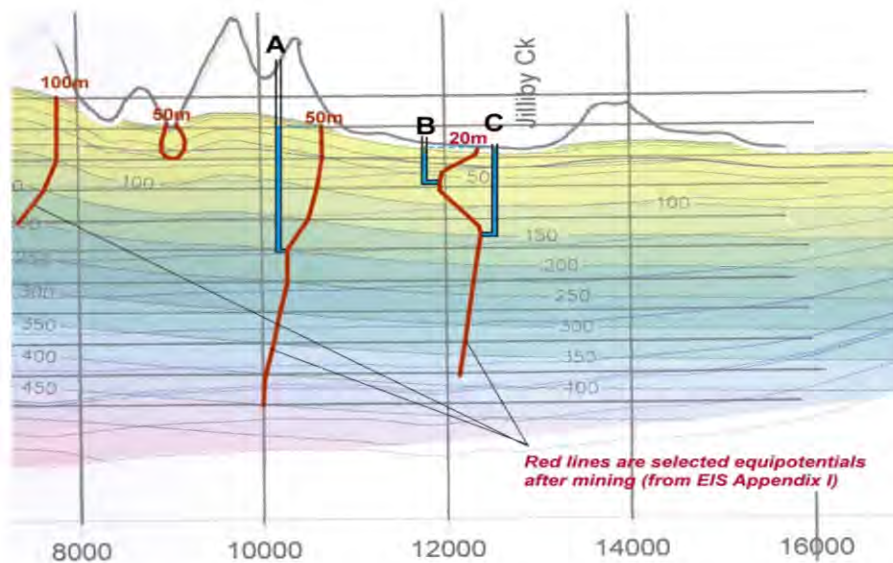


Figure 18: Pre-mining groundwater regime from Figure E17 of Appendix H of the EIS

Figure 19 is the prediction in the EIS of the groundwater regime at completion of mining. Again, selected equipotential lines and the three imaginary wells are annotated onto the figure. The water levels in these wells predicted at the end of mining are again shown by the blue columns. The drop in level for each well is shown by the orange column and as written on the figure. It can be seen that:

- the water level in Well A drops 48m;
- the water level in Well C drops 100m; and
- the water level in the mid-range, 70m deep, Well B drops 12m.

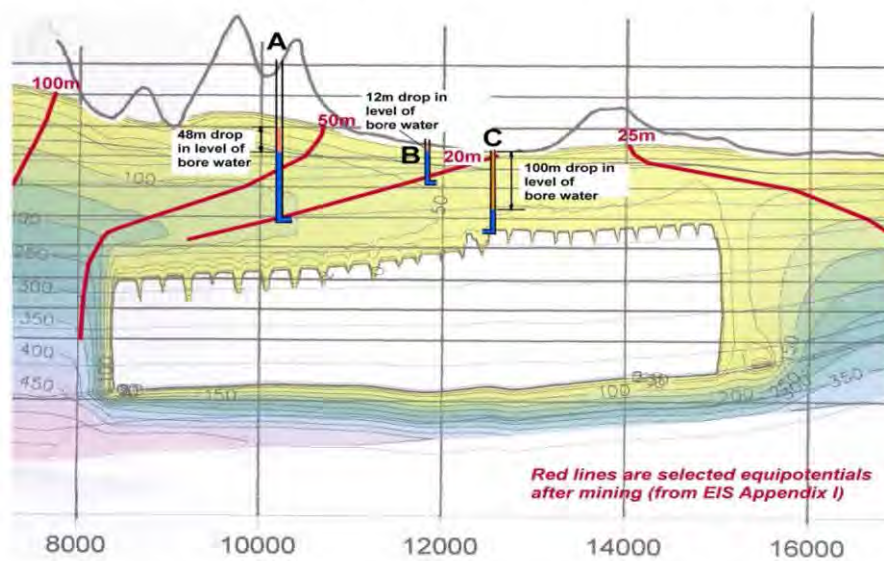


Figure 19: Prediction in the EIS of the groundwater regime at completion of mining

Water level drops in the wells annotated above are substantial and indicate significant changes to the groundwater regime. These pressure drops within the rock must reflect in pressure decreases within the shallow alluvium within the Dooralong Valley, and these decreases, in turn, cause the decrease in base flows to Jilliby Jilliby Creek that are discussed earlier.

It is therefore clear from the modelling results presented in the EIS that there will be very substantial changes to the groundwater regime above the area of the proposed mine.

8.4. Comments on the Groundwater Modelling in the EIS

8.4.1. The Accuracy of Groundwater Models

The validity of any hydrogeological model, notwithstanding its extent, sophistication and cost, depends entirely on:

1. The accuracy of the permeability and storativity parameters for the ground strata
2. The boundary conditions, including recharge from the surface and around the perimeter of the model.
3. Whether the model properly simulates three dimensional behaviour.

Numerical models always contain a significant degree of uncertainty because of uncertainties in respect of items 1 and 2 listed above, and inherent limitations of the methods of analysis within item 3 above.

In the case of the model run by MER for the W2CP (Appendix H) project, the findings are almost completely dictated by two input parameters, namely:

- (a) the assumed permeabilities for the natural strata prior to mine extraction, and in the Confined Zone that is deemed not affected by mining, and
- (b) the thickness of the two zones whose permeabilities are increased by mining, namely, the zone directly above extraction (220m assumed by MER) and the Surface Zone (Forster 1995 Figure 1) where there is increased vertical permeability².

These facets are discussed in further detail below. However, given the dependence on these key parameters the groundwater model for Wallarah 2 should have been run for a range of assumptions for the assumed permeabilities (point (a) above) and extent of fracturing above the longwall (point (b) above), thereby giving ranges of:

- mine inflows,
- change of flow directions above the area of mining,
- downward loss of water from the alluvium of Dooralong Valley,
- probable drops in bore levels within Dooralong Valley, and
- decrease in base flow to Jilliby Jilliby Creek.

However, only one set of figures covering the all of the factors above has been given in the EIS. This prevents an understanding of the probabilities of the mine impacts on groundwater and stream flows.

² This zone has been studied in some detail in the Southern Coalfields and was the cause for loss of water in the Cataract River and the Woronora Rivulet.

8.4.2. Specific matters in respect to the groundwater model

There have not been substantial changes to the assumptions that were adopted by MER in their work presented in the original EIS (2010), compared with those presented in Appendix H of the EIS (September 2012). This is confirmed by a statement in paragraph E4 of Appendix H, namely,

"The 2012 model is identified as model W3. This model is very similar to the previously reported model W1 (MER, 2010)."

The only significant change in respect to assumed permeability values (hydraulic conductivity) is a change for "the Terrigal Formation in hilly terrain".

The following issues represent the uncertainties in the parameters adopted in the model. There are always such uncertainties and it is for this reason that a range of assumptions should have been presented in the EIS to allow proper evaluation of the risks to groundwater and surface waters.

8.4.2.1. Permeability (hydraulic conductivity) assumptions

Firstly, the hydraulic conductivity, or permeability is a measure of how quickly water will flow through a medium, in this case the distance water will flow through the rock in a given time (e.g. meters per second or meters per day). To assess this, MER took samples of solid rock from the exploration bores for the W2CP and considered how fast the water could flow through the rock itself.

In adopting these permeability values, MER makes the assumption that there are no fractures such as joints in the rocks of the Narrabeen Formation below the weathered near surface environment through which water may flow.

The concept that groundwater flow through rock masses is normally dominated by fracture flow, and not substance (core) flow, is so well established in the civil engineering, building construction tunnelling and mining professions that it does not warrant any testimony. Consequently, MER to a large degree, have based their selection of rock permeabilities on laboratory tests on small (50mm diameter) intact core samples. All field permeability testing that has been done for dams, tunnels, basement excavations and coal mines in the Sydney Basin over the past 80 years was unnecessary if core permeability was the relevant measure.

The vast experience of groundwater flow in rock, down to depths of at least 500 m, demonstrates that it is fracture permeability that matters and not core permeability. There are many references to support this contention with many being cited in the following recent publication:

A method of estimating bulk potential permeability in fractured-rock aquifers using field-derived fracture data and type curves, Mandala, Mabee, Boutt and Cooke, Hydrogeology Journal, Volume 21, Number 2, March 2013.

The MER assumption as to the absence of fractures within the bulk of the Narrabeen sequence is also in contradiction to findings of a paper by Cook (2009)

"The bores intersected Terrigal Formation with a preserved thickness of up to 145m in the LGA. Extensive geological and geophysical bore logging delineated aquifers and enabled stratigraphic correlation within and between borefield..... Aggregate yields greater than 15 L/s were recorded from multi-layered aquifers in several bores.

Networks of nested multi-level hardrock and alluvial monitoring bores installed in the borefields revealed direct and indirect hydraulic connection between multi-layered hardrock aquifers with varying degrees of artificially induced vertical leakage from the overlying valley-fill systems during pumping."

The permeability values adopted for the Wallarah 2 model are given in Table 5 (taken from Appendix G of the EIS)

**TABLE 5
NARRABEEN FORMATION (PRE-MINING) PERMEABILITY (HYDRAULIC CONDUCTIVITY) VALUES ADOPTED BY MER FOR THE WALLARAH 2 MODFLOW MODEL**

UNIT	HORIZONTAL		VERTICAL	
	m/day	m/sec	m/day	m/sec
Terrigal Formation	2.1×10^{-5}	2.4×10^{-10}	3.6×10^{-6}	4.2×10^{-11}
Patonga Claystone	1.8×10^{-5}	2.0×10^{-10}	3.8×10^{-6}	4.3×10^{-11}
Tuggerah Formation	3.1×10^{-5}	3.5×10^{-10}	1.5×10^{-6}	1.7×10^{-11}
Munmorah Conglomerate	3.4×10^{-5}	3.9×10^{-10}	2.3×10^{-6}	2.6×10^{-11}
Dooralong Shale	2.0×10^{-5}	2.3×10^{-10}	2.7×10^{-6}	3.1×10^{-11}
LOG MEAN		2.7×10^{-10}		3.0×10^{-11}

Now, if we compare an analysis of the field measurements from Coffey Partners International for the Wyong area and the Pacific Power at Dooralong with the MER work for the Ulan Mine the following log mean values for the Narrabeen Formation are found.

Wyang and Dooralong (Coffey)	3.37×10^{-9} m/sec
Ulan (MER)	4.69×10^{-7} m/sec

It can be seen from the above data that on average the vertical permeability values adopted by MER for the Wallarah 2 model are 100 times lower than values suggested by the Coffey field testing.

The values adopted by MER apply to ground that has not been disturbed by subsidence effects and are used by MER in the so-called Constrained Zone that is considered to exist from 220m above the extraction level to the weathered portion of the Narrabeen Formation. Therefore, in essence, MER assumes that there will remain a 150m to 300m thick layer of rock with a very low vertical permeability even after mining is completed.

The input of permeability values and assumption on the constrained zone dictate the findings of the model.

This assumption that there will be a Constrained Zone of unaffected permeability more than 220m above the level of extraction is not supported by experience within the Southern Coalfields and at Ulan. However, the EIS has placed a reliance on the behaviour of the Southern Coalfield to provide a model of subsidence at W2CP. The experience and calculated impact of subsidence on permeability presented in the EIS is discussed further in Section 8.4.2.2 below.

8.4.2.2. Contradictions within the EIS

The assumptions regarding permeability in the MER 3D model are contradicted by calculations given in the MSEC/SCT report in Appendix F to the EIS. The calculations show some disruption of the strata throughout the 350m profile above the level of extraction.

Furthermore, Figures 2.28, 2.34 and 2.48 of Appendix F give the post-mining vertical permeability profiles for:

- the Hue Hue 4 mining thickness case,
- the 'valley' case, and
- the 'forest' case.

These permeability profiles are very different from those adopted in the MER model, upon which groundwater impacts are assessed.

To demonstrate the large differences between what the EIS states as being appropriate permeability ranges, and what has actually been used in the EIS to assess impacts on the groundwater regime, we have plotted, in Figure 20, the parameters used by MER (3D model) against the 'valley' case permeability ranges given in Appendix F.

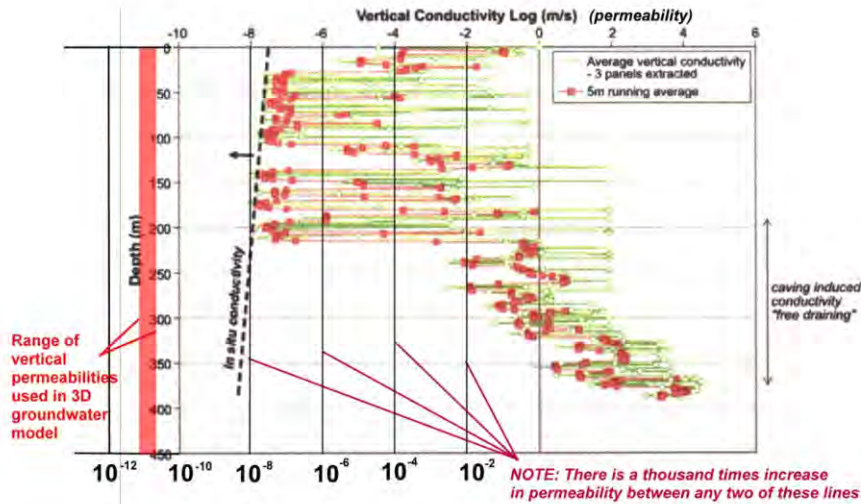


Figure 20 Vertical Permeability values from Appendix F of the EIS versus values used in groundwater impact assessment in Appendix G (After Figure 2.35 Valley Case)

Figure 20 indicates that the hydraulic conductivity values adopted in the MER W2CP model are substantially on the low side of any realistic range of possibilities which have been identified within the EIS itself. If the values provided in Figure 20 were adopted the computed mine inflows, and the rate at which depressurisation progresses through the strata would be substantially higher.

Indirectly MER appear to agree with this assessment. Figure E27a from Appendix I repeated below as Figure 21, shows a distribution plot of vertical (k_v) and horizontal (k_h) conductivity for the Constrained Zone from a synthetically generated randomised distribution.

Interpretation of the data presented in Figure 21 shows that at about 50% of the realisations of vertical permeability have a value equal to, or less permeable than those modelled by MER (about 10^{-11} m/sec or 10^{-6} m/day). However, this indicates that 50% of the potential realisations of permeability are more permeable than those modelled. While it must be acknowledged that the plot below is a probabilistic one, it does show another view that permeability could be higher. The order of increased permeability values shown are:

- 20% of values have a value of k_v up to 10 times greater than those modelled
- 15% of values have a value of k_v up to 100 times greater than those modelled
- 10% of values have a value of k_v up to 1000 times greater than those modelled

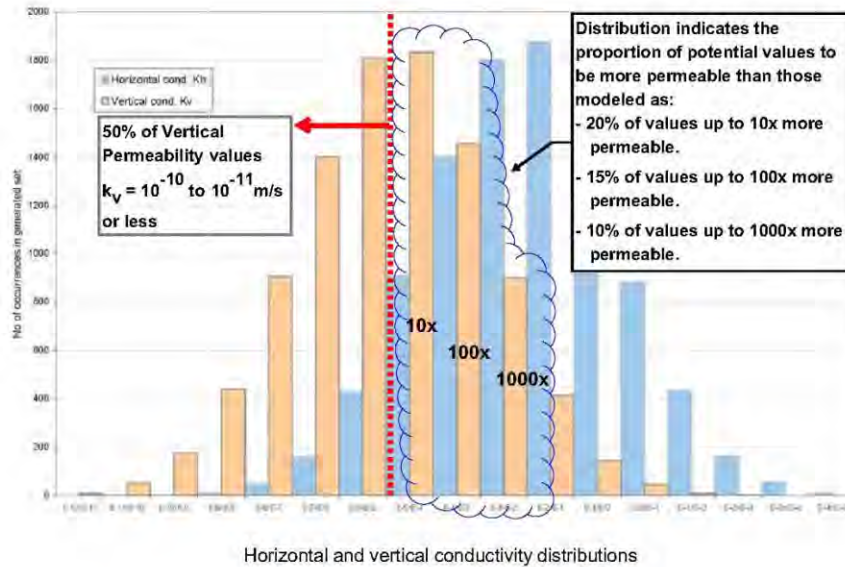


Figure E27a

Figure 21 Distribution of synthetically generated permeability values in the constrained zone by MER – Figure 27a in Appendix H of the EIS

Figure 22 summarises the progression of depressurisation through the strata from the MER model, a process still continuing after 38 years. If MER had adopted the parameters recommended in the previous chapter in same EIS then depressurisation would have been calculated as occurring much faster and to a much greater extent.

Therefore, the flow quantities and extents of depressurisation discussed in Section 8.2, above, must be viewed in the context that they are non-conservative in respect to impacts on groundwater and surface waters. Therefore, the significant impacts actually shown by the MER model, as outlined in Section 8.2, could readily be more adverse, and at the very least warrant assessment with regard to sensitivity and risk.

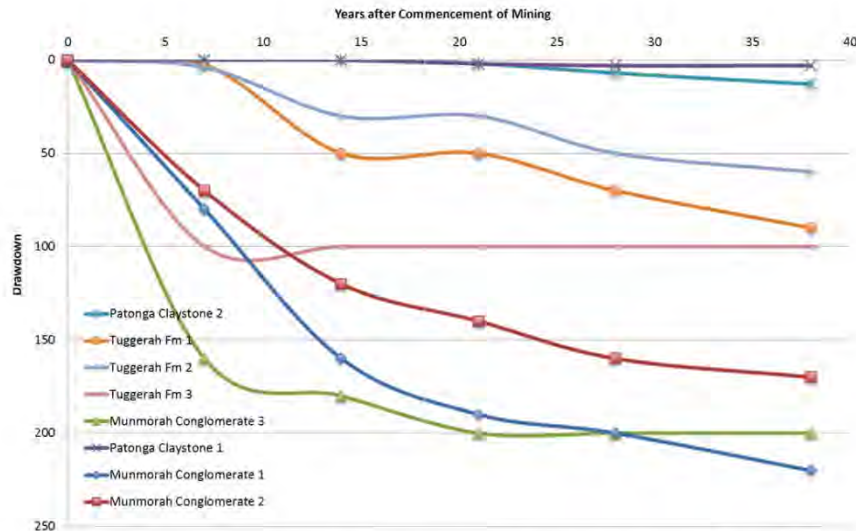


Figure 22 Depressurisation curves extracted from the plots of the MER W2CP model given in Appendix G of the EIS

8.4.2.3. Sampling Methodology

One aspect of the project that has an impact on specialist studies pertains to the makeup of the rock mass that lies between the shallow, alluvial water table and the proposed mine. Studies such as the groundwater modelling rely on the interpretation that the presence of the Patonga Claystone below the alluvium "prevents" water loss from the alluvial layers and the creeks. This is based on the view that no vertical connection occurs to the deeper and apparently more fractured materials in the Tuggerah Formation, the Munmorah Conglomerate and the Dooralong Shale.

The first point to note is that the fracture system in the sedimentary rocks in the Sydney Basin is dominated by sub-horizontal bedding planes and a network of sub-vertical joints. The absence of vertical joints as stated in the EIS is likely to be more of a reflection on the exploration drilling program which exclusively used vertical boreholes, which, by their geometry, are unlikely to intersect such features. Indeed, Mackie notes that:

There is potential for groundwater exchange between strata via fractures and micro cracks which introduce secondary permeability if they are connected. However it is extremely difficult to establish the occurrence, frequency and connectivity of these fractures since they are mostly vertical or sub vertical and consequently are less likely to be intersected by exploration boreholes than fractures that occur at shallow angles.

While we agree that direct connection between the surface alluvial aquifer and the mine is likely to be *rare* (in terms of the risk assessment rating in Table 1B), the potential for water to travel via a *tortuous* path of vertical joints and bedding planes, albeit ones that are often tight and/or infilled with materials like sand, silt and clay, the likelihood that the tortuous path is present cannot be discounted based on the factual geological information provided and the sampling method of vertical boreholes.

We note that it is not typical for a deep coal mine to undertake a programme of angled cored boreholes, particularly in the initial investigation stages due to the prime interest being at depth with regard to coal quality and stability of the longwalls and main headings. While we understand that W2CP have an extensive database of information on fractures over the project area, the EIS does not indicate how this relates to the near surface rock formations, and in particular the assumed aquatard characteristics of the Patonga Claystone strata.

This oversight goes to the heart of the concern raised by the Director General of Planning about uncertainty and recommendations are made at the Conclusion of this report with this in mind.

8.4.2.4. Sensitivity Checks – Model W4

A single model, W4 has been run by MER to consider sensitivity with regard to permeability. However, inspection of the "scaling" used by MER with regard to vertical and horizontal permeability values, particularly in relation to the layers that actually matter in regard to near surface impacts (Table E3 or Appendix H) again do not appear to reflect the subsidence modelling (SCT 1999 & 2011 as referred to by MER). The factors used to scale the permeability values in the MER "sensitivity model – W4" are repeated in Table 6.

A key parameter in our discussion on groundwater above is the vertical permeability of the Patonga Claystone. Table 6 shows that the sensitivity of this parameter has not been tested.

**TABLE 6
PERMEABILITY SCALING FACTORS – MER SENSITIVITY MODEL W4**

LITHOLOGY	SCALING FACTOR USED BY MER	
	VERTICAL PERMEABILITY (x K_v)	HORIZONTAL PERMEABILITY (x K_h)
Terrigal Formation	1	1
Patonga Claystone	1	10 & 20
Tuggerah Formation	1.1, 2 & 10	60, 100 & 600
Munmorah Conglomerate	100 & 1000	1000 & 6000
Dooralong Shale	90000	148000

8.4.2.5. Absence of critical parameters

MER has properly used the version of MODFLOW that addresses the impact of desaturation in the strata on reducing permeability values. This reduction in permeability has a very important impact on the computed mine inflows and the rate of depressurisation.

There is no information in the EIS, and in particular in Appendix G, that sets out what assumptions have been made in the model in respect to permeability reduction in the desaturated zone in the goaf. Therefore, it is impossible for a measured review to be made of the model results.

In addition to presenting the material parameter assumptions, it would have been proper for the assumptions to be validated against field data from Mandalong Colliery, where there has been substantial depressurisation above the extracted longwalls, viz:

Mining of the longwall panels has however resulted in depressurization of the deeper overburden.

Whereas at some depths this may be a temporary depressurization due to bedding parting, at deeper levels the bedrock has probably been permanently depressurized/dewatered when mining intersected a fault and/or goafing provided hydraulic connection with the mine. The alluvium and shallow overburden has however not been impacted with the exception of site BH22, as stated.

The data also indicates that the Great Northern Seam to the south of the Mandalong Mine may have been depressurized as a result of mining in the area, but that the deeper Fassifern Seam has not been impacted.

*End of Panel Report
Longwall 12
Mandalong Mine
August 2012*

8.5. Borefields

Borefields have been developed for use by the W2CP as a drought contingency measure and we understand there is only limited data on the historical operation and medium to long term yields of these resources.

Borefields are located at:

- Woy Woy
- Somersby
- Mangrove Creek
- Ourimbah
- Mardi.

The yield from these borefields is reported as being:

- | | | |
|---------------------|---|-----------|
| • Woy Woy | = | 3.8ML/day |
| • Ourimbah (Narara) | = | 1.2ML/day |
| • Other (remaining) | = | 3.0ML/day |



Notwithstanding the relatively small volume of water reported above, we consider that only the Mardi groundwater bores have any potential to be impacted by the W2CP as they are within about 3km of the southern extent of the mine. The remaining fields are considered too distant to be affected (>6km).

With regard to the Mardi borefield, it actually only comprises one functioning bore, BH15 located at the Mardi Water Treatment Plant site. A second bore, BH16 at Mardi Dam (near Woodbury Park) is understood to no longer be operational. Bore BH15 is understood to extend to a depth of 150m, which is expected to locate the base of the bore in rocks of the Tuggerah Formation, or possibly in the top of the Munmorah Conglomerate. The WGN seam is at about -400mRL to -450mRL in this area (Figure 5 Appendix I) indicating a depth of about 450m to 500m.

Based on predicted piezometric drawdown levels in the EIS (Figures E23 and E26, Appendix I), the location of bore BH15 will not be affected during the period of mine operations. However, some drawdown of up to 5m may occur, based on the EIS after a long period of time (modelling was based on 500 years after mining).

CCWC would need to assess this prediction with regard to the known operation of the bore.

8.6. Findings

The conclusions reached by MER are primarily the result of the input parameters adopted for their numerical modelling. These input parameters are neither consistent with available data from field testing nor the subsidence calibration modelling and do not consider the impact of extended periods of drought conditions on the surface recharge assumed in the modelling. The level of uncertainty is considered to be high and without sufficient sensitivity assessment of the impacts of inputs to the model.

On this basis, the findings from the MER study should be considered as a limited and very likely, unconservative view of potential impacts. This means that, at present, it is not known with an acceptable level confidence what the impacts of the Wallarah 2 longwalls will be on likely groundwater resources, and on groundwater that feeds into the streams of the Dooralong and Yarramalong Valleys.

9. FLOODING

9.1. Introduction

The assessment of flooding impacts of the W2CP is based on material presented in Appendix K by G Herman and Associates (Herman), although this work relies upon information provided in other Appendices in the EIS, viz:

- Appendix G: Subsidence Modelling
- Appendix J: Surface Water Impact Assessment.

As described in Reference 2, the Yarramalong and Dooralong Valleys are well defined and comprise steep valley sides with flat floodplains. As a result, increases in flood levels cause relatively small increases in the overall extent of floods.

The previous EA included assessment of the affect the W2CP on the extent and depth of flood events was undertaken by Environmental Resources Management (ERM) and was included as Appendix C to the 2010 EA. The new assessment presented in the EIS states that the previous flooding assessments were *“fundamental in the development of the current final mine plan assessed in this report”*.

However, the flood study by Herman utilised more advanced methods of assessment utilising the TUFLOW software package to allow 2D modelling as compared to the 1D/pseudo 2D modelling undertaken in the earlier studies. This was in line with suggestions from the review panel in 2009.

Herman only assesses flooding for design storms with a 1% and 20% Annual Exceedance Probability (AEP). A 1% AEP implies there is a 1% chance that the design flood will occur, or on average the design flood can be expected to occur once every 100 years.

The 1% AEP flood maps are included in Annex I to Appendix K and are included in the following sections.

The flood maps for the 20% AEP assessment are not present within the EIS document, this being the design flood which is expected, on average to occur every five years

9.2. Study and Modelling

The study area for the flood assessment includes the areas immediately below the W2CP in the Yarramalong and Dooralong Valleys and in the Hue Hue Creek area and obviously considers flooding due to rainfall across the full catchment areas upstream of the proposed mine. The extent of the study area is shown in Figure 23 and comprises:

- Wyong River upstream of the F3 for a distance of 25.9km.
- Jilliby Jilliby Creek upstream of its confluence with Wyong River for a distance of 20.05km.
- Little Jilliby Jilliby Creek.
- Hue Hue Creek upstream of the F3 for a distance of 5.48km.



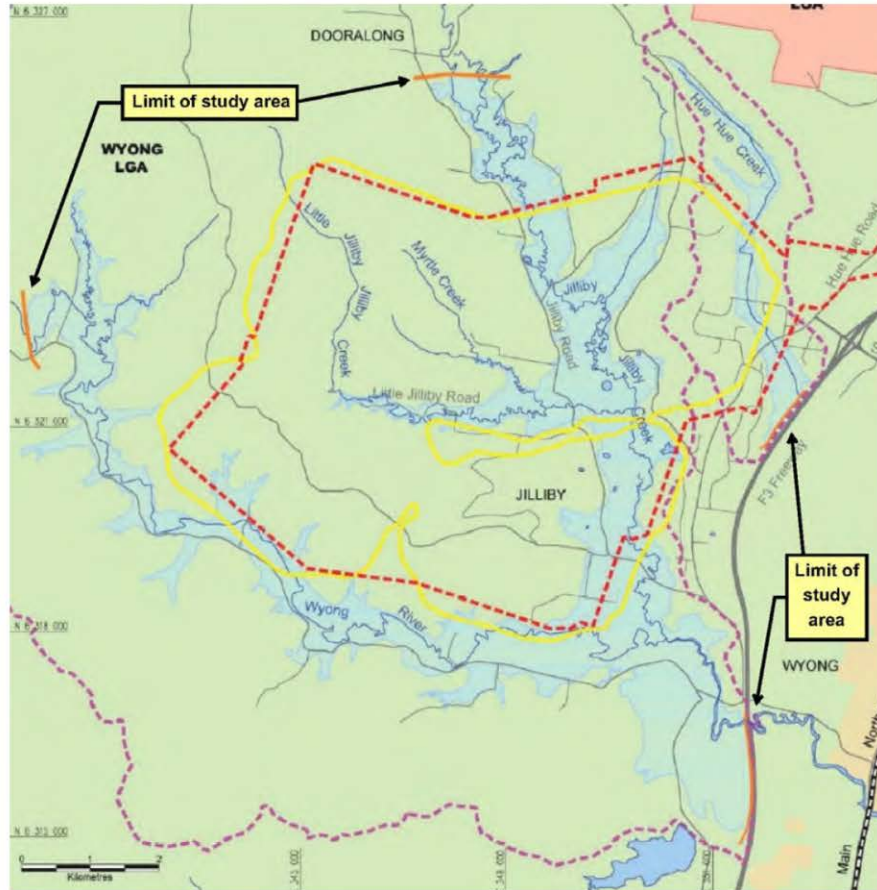


Figure 23: Study Area

As indicated above, the 2D TUFLOW software is able to model secondary flow effects which often occur at stream confluences or the influence of tidal or backwater flows due to high water levels downstream of the study area, such as may occur due to climate change effects. The programme is also able to model the transition between supercritical and subcritical flows. This ability is considered important with subsidence quite possibly producing conditions (i.e. a sharp increase in elevation) that could cause a change in the flow regime. However, it should be noted that TUFLOW cannot model hydraulic jumps.

A further advantage of the TUFLOW model is that it is far more flexible than the modelling software utilised earlier and can be re-calibrated either during the initial work or later such as over the lifetime of the mine if different impacts of flooding are observed to those found from modelling.

A summary of the work conducted in the flood impact assessment is presented below:

- A TUFLOW model was developed to simulate the pre and post mining subsidence flood differences for a 1% AEP flood.
- The assessment considered points of stream construction such as bridges and undertook a process of calibration to ensure the pre mining modelling reflected historical and community records of past flooding.
- Assessed the extent of flooding and level differences due to the project.
- Allowed recommendations on dwellings, access roads and flood hazard risk impacts due to the flooding differences caused by the W2CP.
- Assessed the sensitivity of the results to reasonable changes in the input parameters, in particular Manning roughness coefficients, and due to climate change effects by:
 - Increased storm input to the model by 20% to simulate increased wet periods in the future, and
 - Application of a high tailwater level of 1.1m at the F3 boundary to simulate high lake and/or river water levels.

Further to the above, the following points are noted.

- Sensitivity checks for climate change are described by Herman as simplistic and very conservative. The approach is not considered current best practice (for example a different method will be applied in the upcoming Australian Rainfall and Runoff (AR&R) update). However, the approach is very closely modelled on the NSW legislation requirements, which are conservative. Whilst the modelled climate change results are expected to 'over-engineer' the result there are no adverse effects except possibly higher costs to the project if any pre-emptive works are dictated such as bridge or road access points.
- In general, the model has a low sensitivity to antecedent conditions and downstream boundary condition tail water level and a slightly higher sensitivity to Mannings n and the degree of subsidence.
- Changes to material properties (e.g. Mannings 'n') resulted in slightly reduced peak flows, but increased the peak flood levels by up to 0.15m.

- Changes in the downstream boundary condition tail water level caused virtually no flooding differences beyond 600m upstream of the downstream boundary condition.
- Calibration of the model has been done using the historical stream flow results from within the catchments. However, due to the limited stream flow data in the catchments the model may not be calibrated properly for floods < 2%AEP, due to the absence of records with an AEP less than 0.02. The calibration process was to calibrate the initial/continuing losses, calibrate Mannings 'n' and then recalibrate the initial/continuing losses.
- The DTM's (Digital Terrain Models) used as for input to TUFLOW are from 1996 or more recently. The calibration floods are all from prior to 1996. It is possible with the creek/rivers being subject to dynamic geomorphological changes (see Appendix J to the EIS) that the DTM in the model used could be different in the stream/creek locations for the calibration years, which would be more critical if there was significant curvature/alignment differences between the calibration years and post 1996.
- Whilst it seems logical to select maximum parameters from the AR&R for the IFD calculations as a conservative assumption, this may not be the case, as discussed below.
 - The BOM online service has been used to provide an IFD curve for the project location. When compared with results from Annex B there are up to 10mm/h differences in the 100yr ARI results. The differences are maximum at shorter durations and a minimum at a 72hr duration (0.08mm/h), with, as expected, the results in Annex B always the greater of the two.
 - The 30hr and 12hour durations give the critical floods for the Dooralong/Yarramalong and Hue Hue models respectively.
 - The calibration cannot be confirmed for storms with an ARI greater than 50yrs due to the available historic stream flow data.
 - The Mannings 'n' values considered had to be increased over the whole catchment in the calibration process. It is possible that this could be a result of 'overestimating' the input rainfall, which would cause the roughness to have to be increased in calibration to give the calibration results. This when combined with the fact that all calibration is done on <50yr ARI storms and that modelling is done for 100yr ARI storms means that the overall catchment roughness may be overestimated (as a portion of the flood plain covered in an 100yr ARI flood is unlikely to have been covered in the <50yr ARI calibration storms), which would attenuate and translate the peak of the hydrograph (potentially underestimating the peak).

Overall, the calibration is considered acceptable and likely to be relatively insensitive to the technical points made above.

Aspects considered beyond the scope for the work presented in Appendix K are:

- Fluvial geomorphology
- Low flow hydrology and river hydraulics
- Sediment transport and deposition.

9.3. Impact of Mining on Flooding

9.3.1. Overview

Results of the flood modelling for the 1% AEP flood event indicate that subsidence from the current W2CP mine plan is likely to result in only minor increases in the depth and extent of flooding compared to current, pre-mining estimates.

A summary of the changes in flood extents and depths as a result of mining subsidence is presented in Tables 8 and 9 below. The reader will also note the introduction of the Flood Impact Category rating in Table 7. A description of what each Impact Category comprises is included in Table 9.

Further to the dwellings described in Table 8, a total of 14 dwellings have no significant change in flood impacts while a total of 49 properties will see a reduction in flood impacts. Most falls in flood level are predicted to be negligible (less than 50 mm fall in flood level). We note that dwelling (D0226) listed as Flood Impact Category E1 is incorrectly assessed, it should be Category E2 based on the values presented in Table 6.2 of Appendix K of the EIS.

Other impacts of the subsidence on flooding such as flood peak flows are anticipated to be slightly reduced with a minor increase in the duration of the peak, although the EIS notes these as being insignificant.

Further, key access roads and some bridges within the Dooralong and Hue Hue valleys will become inaccessible for longer periods as a result of the subsidence.

The reader should note that changes noted are in relation to the 1% AEP event and that the impacts described would only fully come into effect after mining has been completed. Also note that there are minor discrepancies in Appendix K where slightly higher impacts are reported in the executive summary compared to the main body of the report.

**TABLE 7
CHANGES TO EXTENT OF FLOODING**

AREA	AREA OF ADDITIONAL FLOODING IMPACTS	AREA NO LONGER AFFECTED BY FLOODING
Yarramalong Valley	5.2 Ha	Nil
Dooralong Valley	28.3 Ha	5 Ha
Hue Hue Creek	1.9 Ha	0.8 Ha
Total Areas	35.4 Ha	5.8 Ha

The changes to flooding extents will have an adverse effect on up to 10 properties. The impact is assessed to be up to 5% of additional land area inundated (4 Properties) and up to 20% of additional land area for the remaining 6 properties.

**TABLE 8
ADVERSE IMPACTS TO DWELLINGS**

DETAIL (IMPACT CATEGORY)	CHANGES TO FLOOD IMPACT	
	YARRAMALONG & DOORALONG VALLEYS	HUE HUE CREEK
Dwellings not currently affected by flooding become flood prone ^A (MAJOR – A1)	4 in Total 3 between 4 & 14cm 1 up to 1.27m	1, up to 7cm
Increased Inundation ^A (MAJOR – A2)	1, up to 41cm	None
Increased Inundation ^A (MODERATE – B1 & B2)	7 in Total Increase flood levels by between 6 & 17cm	1, up to 3cm
Reduced Freeboard ^B (MODERATE – B3)	2 in Total Freeboard Levels of between 26 & 28cm	1, Freeboard remaining of 4cm
Increased Inundation ^A (MINOR – C2)	4 in Total Increase flood levels by between 1 & 4cm	None
Reduced Freeboard ^B (MINOR – C1 & C3)	6 in Total Freeboard Levels of between 8 & 48cm	None
^A Flooding depth above floorboard level.		
^B Remaining amount of freeboard between predicted flood level and floorboard level.		

9.3.2. Flood Maps, Dwellings and Property Impacts

A detailed description of the flood study findings can be found in Sections 6.4 to 6.6 of Appendix K. The results are presented in two formats, namely flood maps and tabular format indicating the following:

- Detail on flood levels and freeboard associated with each dwelling for the 1% AEP and 20% AEP are presented in Tables 6.1, 6.2 and 6.3 of Appendix K, although no key is provided as to street addresses associated with the Dwelling ID's.
- Tables 6.4 and 6.5 present a summary of the Impact Category for the changes in the flood status of Dwellings and properties respectively that are a result of the W2CP.

For this report, we have provided a summary of the information from both the flood maps for the 1% AEP. Figure 24 shows an overview of the increased extent of flood water post mining for a 1% AEP flood. Figures 24 and 25 show a detailed view of the Dooralong and Yarralong Valleys respectively.

Tables 6.4 and 6.5 in Appendix K have been reproduced here as Tables 10 and 11 respectively. The latter two tables described in the second bullet point above are also included as it is useful in outlining the extent of the change at each dwelling and categorise how the detrimental impacts of flooding due to mine subsidence is likely to be treated by WACJV.

Figure 24: Overview of Increased Extent of Flooding (1% AEP) shaded red and areas of reduced flooding shaded green along the fringes of the Dooralong Valley.



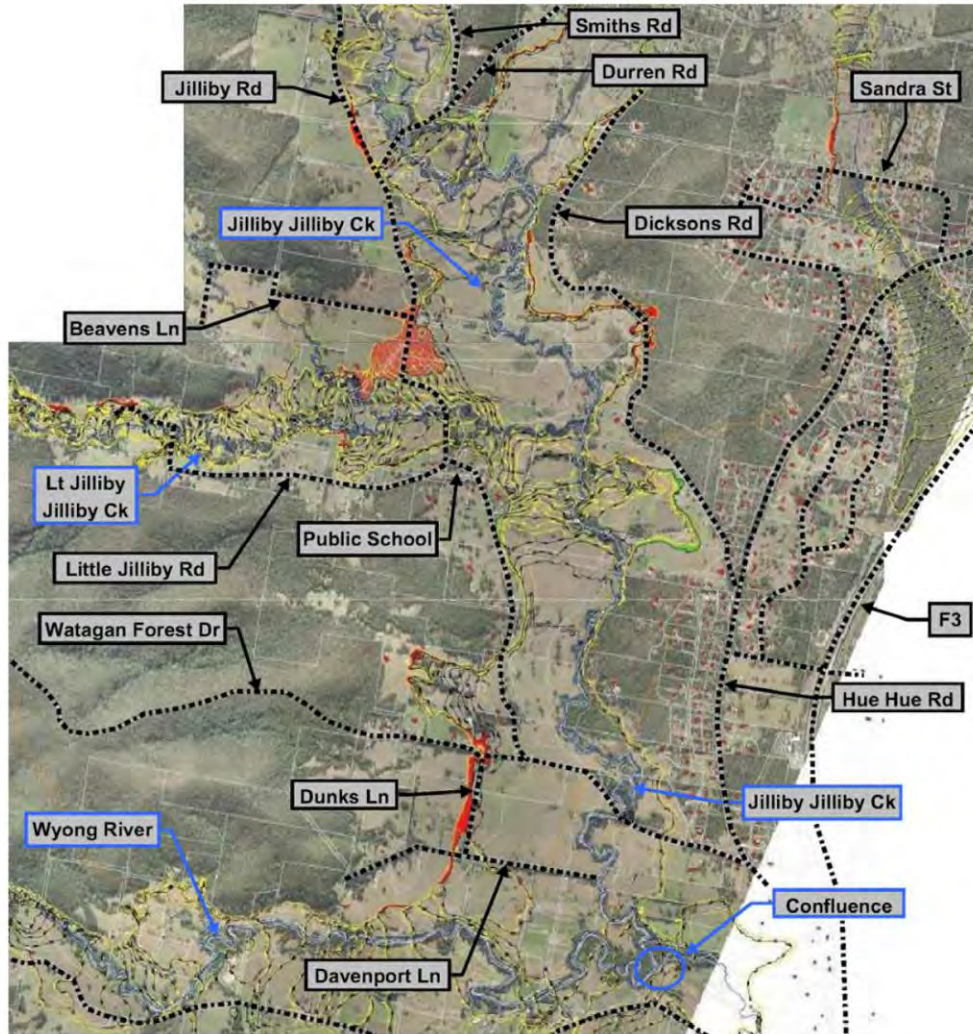


Figure 25: Main Areas of Increased 1% AEP Flooding – Dooralong Valley

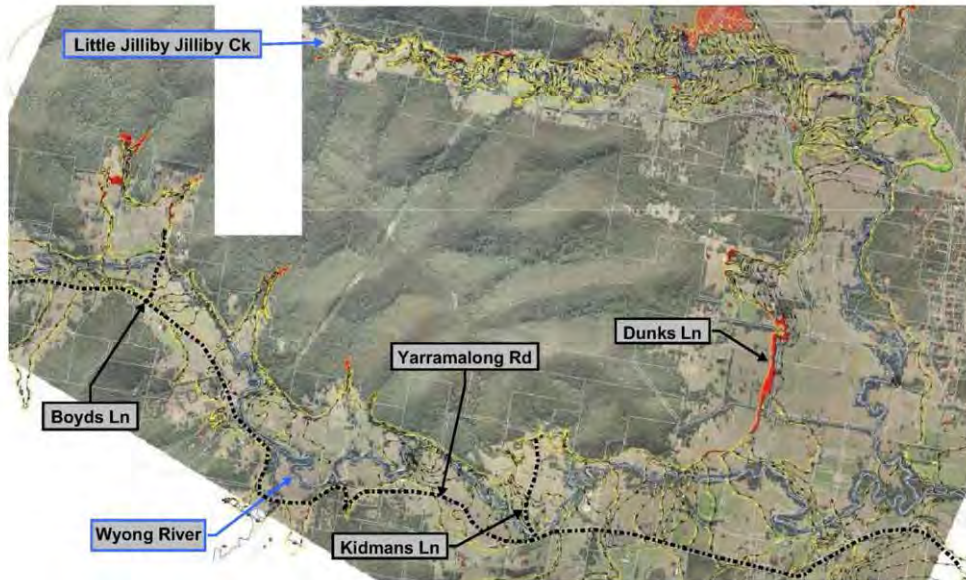


Figure 26: Main areas of increased 1% AEP Flooding – Yarramalong Valley

A minor, but significant point from the aspect of EIS review is that of presentation. It is difficult to interpret with any confidence what the flood levels are on the 1%AEP flood maps included in Annex I to Appendix K nor from the various Figures throughout the text of the EIS. Indeed, the only clearly defined data is that presented in Tables 6.1 to 6.5 of Appendix K with the limitation as to no actual identification of dwelling.

A sample of the current 1% AEP mapping available to Council (from the 2012 Wyong River Flood Catchment Study by BMT WBM) is given as Figure 27 and clearly shows flood levels and depth of flooding.

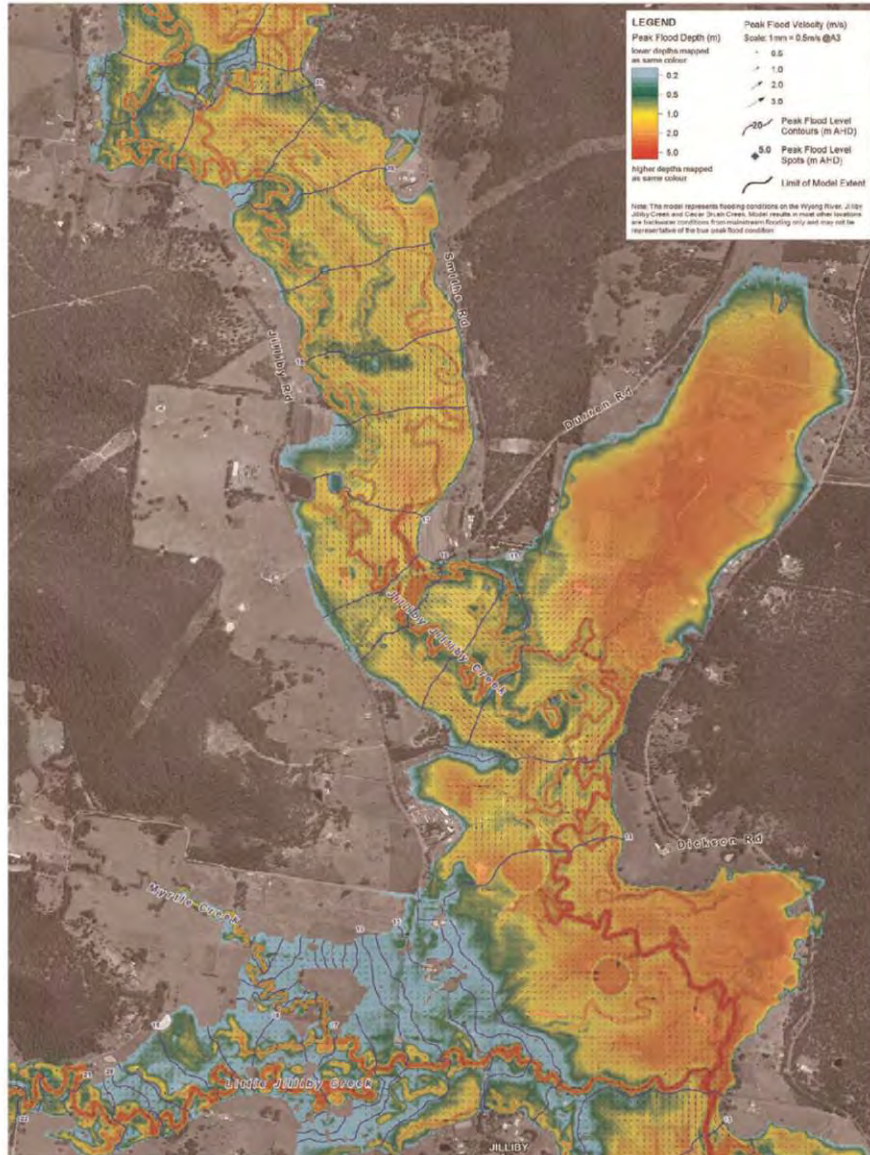


Figure 27: Sample of 1% AEP Mapping for confluence of Jiliby Jiliby and Little Jiliby Jiliby Creeks (2012 Flood Study by BMT WBM).

**TABLE 9
FLOOD IMPACT CATEGORIES - DWELLINGS**

TABLE 9
FLOOD IMPACT CATEGORIES - DWELLINGS (Continued)

**TABLE 9
FLOOD IMPACT CATEGORIES – DWELLINGS (Continued)**

Category	Description	Number Affected	Houses Affected	Impacts
E3	Negligible (<0.05 m) reduction in flood levels and/or freeboard after mining for all floods	46	(see Tables 6.2 & 6.3)	No impacts and no significant change
U	Unchanged			
U	No change in flood depths after mining but minor change in ground levels	14	D0006, D0009, D0048, D0106, D0108, D0115, D0170, D0201, D0377, D0384, D0712, D0869, and sheds S0048, S0842	No impacts

**TABLE 10
FLOOD IMPACT CATEGORIES – PROPERTIES**

Category	Description	Number Affected	Land / Properties Affected	Impacts
L1	Reduction in Flood Extent of 1:100 yr flood (1%) by more than 5% of individual property area after mining.	2	Generally grazing land near property boundary.	Moderate Beneficial Impact.
L2	Reduction in Flood Extent of 1:100 yr flood (1%) by less than 5% of individual property area after mining.	3	Generally grazing land near property boundary.	Minor Beneficial Impact.
L3	Increase in Flood Extent of 1:100 yr flood (1%) by more than 5% but less than 20% of individual property area after mining.	4	Mostly grazing land plus some areas of non-agricultural and uncleared land.	Minor to Moderate Adverse Impact.
L4	Increase in Flood Extent of 1:100 yr flood (1%) by more than 20% of individual property area (or other major effect) after mining.	6	Agricultural land plus one cattle property.	Moderate to Major Adverse Impact.

9.3.3. Access and Low points

Low points on access routes were assessed based on the pre and post mining flood levels considering the NSW Floodplain Development manual (2005) for safe depths for vehicles at specified flow velocities.

A total of thirty low points were identified by Herman. Figure 28 indicates the location of key low points on both primary and secondary access routes. Table 11 summarises the details of the key low points on primary access routes.



Figure 28: Low points and flood affected roadways (both primary and secondary access routes)

**TABLE 11
KEY LOW POINTS – PRIMARY ACCESS ROUTES**

Key Low Point ID	Maximum Existing Trafficable RL (m AHD)	Maximum Subsided Trafficable RL (m AHD)	Existing Inundation Duration (hours)		Post-mining Inundation Duration (hours)		Increase in Inundation Duration (hours)	
			1% AEP	20% AEP	1% AEP	20% AEP	1% AEP	20% AEP
D20	20.0	20.0	19	9	19	9	Nil	Nil
D30	19.3	19.3	5	0	5	0	Nil	Nil
D40	18.35	18.35	19	11	19	11	Nil	Nil
D41 (Bridge C)	15.40	14.21	24	24	22	21	Nil	Nil
D50	10.0	8.7	6	0	33	31	27	31
D60 (Bridge A)	7.9	7.9	24	21	24	22	Nil	1
D70	12.45	11.24	15	12	28	25	13	14
D80 (Bridge B)	14.9	13.7	10	0	15	11	5	11
D81	14.7	13.4	11	4	17	10	6	6
Y80	12.6	12.4	71	68	73	69	2	1
Y90 (Bridge 7)	13.06	12.95	62	54	63	55	1	1
Y170 (Bridge 3)	9.84	9.84	50	50	50	49	Nil	Nil
Y180 (Bridge 2)	9.20	9.20	51	50	51	50	Nil	Nil
Y190	9.25	9.25	33	32	33	32	Nil	Nil
Y230	7.85	7.85	10	0	10	0	Nil	Nil

As can be seen from the table above, six locations are expected to be inundated for longer periods as a result of the W2CP subsidence (1% AEP), the increased period over which access will not be possible varies from 1 hour up to a maximum of 27 hours at D50 toward the southern end of Jilliby Road, just north of the intersection with Watagan Forest Drive.

Of the secondary access routes, the maximum reported increase in inundation due to mining is 13 hours at point D70 on Dickson Road.

9.4. Mitigation

9.4.1. Property

As reported above, Herman presents a range of categories against which the impact of flooding induced by mining subsidence may be assessed. Similar to remarks made by ERM in 2009, Herman suggest that it

"would be reasonable to expect that mitigation works will be required for dwellings in Category A (Major Impacts) and Category B (Moderate Impacts). However, dwellings in other categories are unlikely to require mitigation works."

There are a total of 6 dwellings identified as Category A (2 less than the 2010 assessment) and 11 dwellings as Category B.

Mitigating options are discussed in relation to the management measures outlined in the NSW Floodplain management manual (2005) and comprise works that comprise either:

1. Property modification – either of the property itself such as by raising or flood proofing, new controls on the property and infrastructure such as bunds, or outright purchase.
2. Response modification of the population at risk through measures such as evacuation plans.
3. Flood modification measures such as retarding dams, levees, bypass floodways or channel improvements.

Herman has spent some time considering the options above and has made some preliminary suggestions:

- i. Minor channel improvements can be made to a short reach of Jilliby Jilliby Creek below the confluence with Little Jilliby Jilliby Creek but this would be to address localised ponding issue and would have little impact on flood levels.
- ii. Raise Sandra Street to increase the retarding storage upstream. However, the single dwelling immediately upstream at this location would be further impacted but may limit the requirements for purchase / relocation of properties in the Hue Hue precinct.
- iii. Raising or relocating of three timber framed dwellings (ID = D0060 by 0.63m, D0061 by 0.86m & D0237 by 2.02m)
- iv. Possible new construction of dwellings of equivalent or superior size, quality and amenity – this option is suggested for all the dwellings identified in the Flood study as being adversely affected by flood changes due to subsidence.
- v. Construct grassed earthen levee(s) around dwellings to provide a minimum freeboard of 0.3m. Possible dwellings that this method may suit are D0017, D0058, D0737, D0063 and D0430.

Herman notes that with regard to the voluntary purchase of properties, while a viable option, the mechanism and form of compensation is beyond the scope of their report.

Lastly, Herman notes that WACJV is not responsible for any works pertaining to existing impacts of flooding.

9.4.2. Access

The six, primary access route low points adversely affected by subsidence related flooding can be raised after subsidence has occurred to mitigate the adverse effect. In some instances, the works may require new culvert works to facilitate passage of flood waters past the obstacles.

The impact of "raised" roads does not appear to have been considered as a sensitivity scenario for the flooding assessment and would need to be undertaken if any of these works is to be considered.

9.5. Findings

The results of the flood assessment appear reasonable given the limits of the prediction of subsidence and can be considered as "best practice". However, changes to mine plans can and almost invariably do occur prior to final approval with the associated changes to subsidence. The predicted movement may well be less but could equally be more than currently stated and so the impacts of flooding within the mined areas are also likely to vary.

The discussion on potential flood mitigation measures remain at a feasibility level but are considered appropriate and to constitute "best practice" for this level of appraisal. Detailed assessment will be required if planning approval is given and this must ensure all the Director General's requirements are met.

Notwithstanding the above an ongoing programme of review of subsidence and its impacts on flooding is essential to ensuring flood impacts are correctly assessed and remedial measures undertaken to mitigate flooding.

10. NORMAL STREAM FLOWS

10.1. General

The impact of mining on stream flows in "normal" conditions has been considered by the W2CP and is reported in Appendix J of the EIS. The assessment was undertaken by WRM Water and Environment (WRM) in 2013.

Assessments are driven by a consideration of subsidence along existing creek alignments for the Wyong River, Jilliby Jilliby Creek and Little Jilliby Jilliby Creek. Figures 29 and 30 present the profile along Jilliby Jilliby Creek and Little Jilliby Jilliby Creek respectively. A similar plot for Wyong River has not been produced due to the maximum predicted subsidence being only 150 mm at some locations.

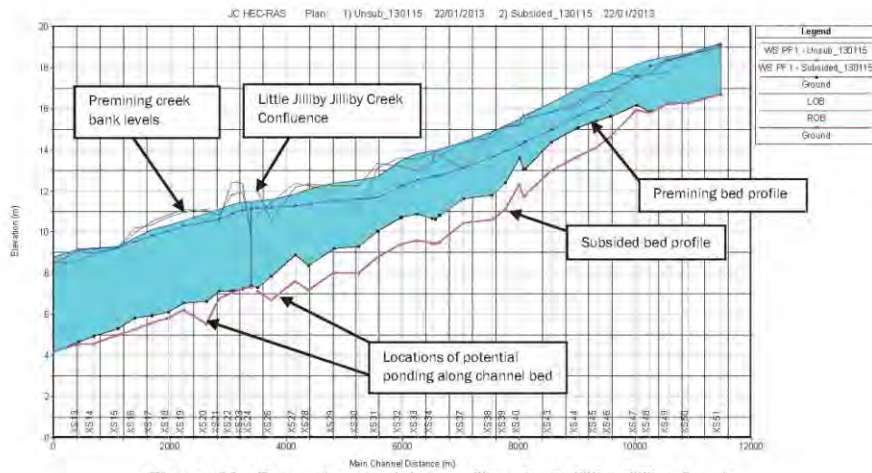


Figure 29: Pre and post mining profiles along Jilliby Jilliby Creek

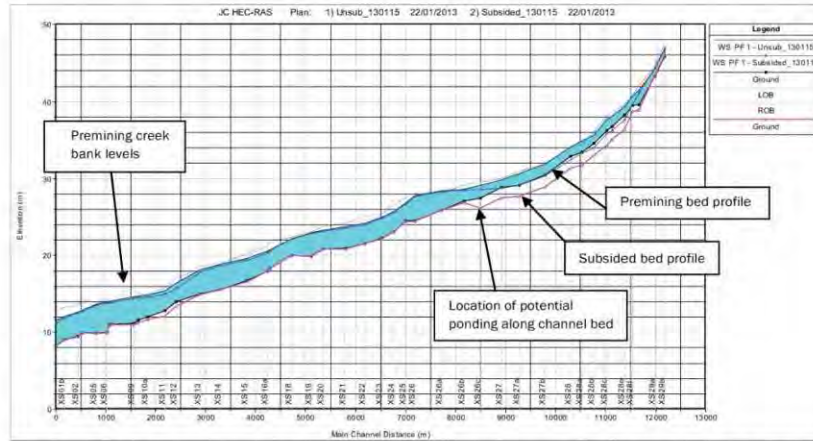


Figure 4.15 Longitudinal Section of Little Jilliby Jilliby Creek Upstream and Downstream of Jilliby Jilliby Creek Confluence, Bed and Water Levels, Pre and Post Subsidence, Bankfull Flow Conditions

Figure 30: Pre and post mining profiles along Little Jilliby Jilliby Creek

Figures 31 and 32 also present the changes in creek flow velocity as a result of subsidence for the Jilliby Jilliby and Little Jilliby Jilliby Creeks respectively. As can be seen, the maximum predicted increase in flow velocity is up to 0.2m/sec in the Jilliby Jilliby Creek and less than 0.1m/sec in the Little Jilliby Jilliby Creek.

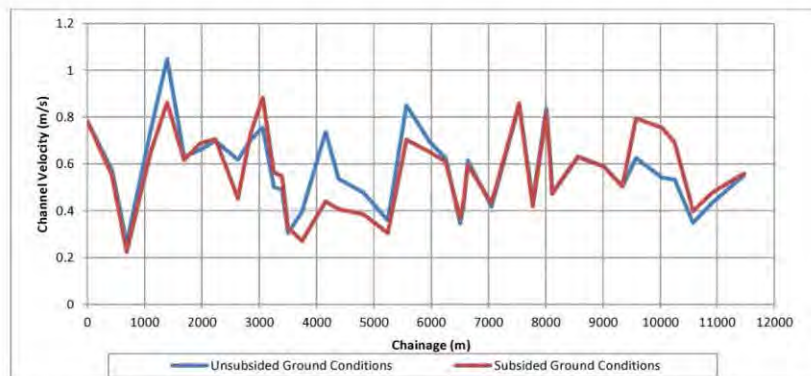


Figure 4.13 Longitudinal Section of Jilliby Jilliby Creek, Velocities, Pre and Post Subsidence, Bank Flow Conditions

Figure 31: Pre and post mining normal stream flow velocity along Jilliby Jilliby Creek

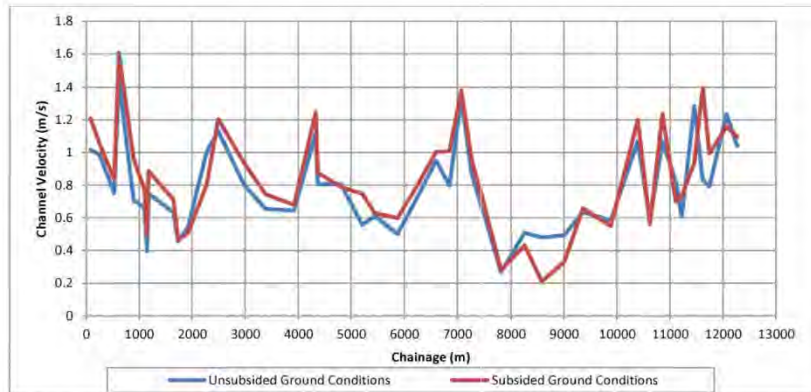


Figure 4.16 Longitudinal Section of Little Jilliby Jiliby Creek, Velocities, Pre and Post Subsidence, Bankfull Flow Conditions

Figure 32: Pre and post mining normal stream flow velocity along Little Jilliby Jiliby Creek

The impact of subsidence is considered by the EIS in the following areas.

- a. stream levels and localised changes to the level of ponded water
- b. flow velocities and impacts on erosion
- c. localised widening and narrowing of streams
- d. flora and fauna
- e. downstream wetlands
- f. water quality.

Items a. to c. are discussed in the sections below. The other items are considered outside PSM's area of expertise.

10.2. Loss of Surface Water

Loss of water into the near surface zone is critical to stream flows and the ecology of the streams. The issue of loss of surface water is discussed in Section 8.2 of this report. The reader should note that the assessment of this issue by WRM is governed by the fact that the loss to groundwater reported by MER is taken as the basis for the assessment, ie. "It was assumed that impacts to baseflow were negligible (MER 2013)".

10.3. Stream Flows and Ponds

In general terms, subsided areas can result in increased areas or "bowls" where additional water storage can occur along streams. Increased storage capacity can result in deprivation of water flows into areas downstream of the "bowl". Where base flows are low or ephemeral this can lead to longer and/or more frequent periods of drying downstream of the pond.

Impacts upstream of any such "bowl" are difficult to interpret off the plots presented in the Figures showing the current and predicted creek longsections above. However, it is likely to be limited to less than say 500m, and in all likelihood less than say 100m.

Based on the creek long section profiles presented in the Figures above and on the EIS, "bowls" where ponding may be predicted to occur are:

1. Negligible along the Wyong River.
2. Up to about 1m depth at two locations along Jilliby Jilliby Creek, one just upstream and the other just downstream of the confluence with Little Jilliby Jilliby Creek.
3. Between about 0,5m and 1m depth along the Little Jilliby Jilliby Creek in the upland forested region toward the head of the creek).
4. Unknown along the Hue Hue Creek.

Following the points above, the potential for dry conditions, solely as a result of upstream ponding to adversely impact native flora and fauna will be minimal but could impact stream edge environments for some short distance downstream of the ponded water. However, WRM make the comment that;

"Inspection of the waterway (Jilliby Jilliby Ck) indicates that the creek is experiencing active bank erosion under existing conditions",

And that

"the main channel drainage system and sediment transport dynamics are unlikely to experience significant adverse impacts due to the project"

Based on these statements, WRM indicate that the stream beds should readily re-level themselves, via erosion to re-establish a continuous stream bed.

This statement is expected to be correct where the ponds occur in the more silty and sandy alluvial soils along the creeklines, but may be much more limited or restricted if the ponds occur in areas of heavy clay. The timeframe for these changes depends on the soil types and also the flow velocity and frequency where the stream is ephemeral.

If ponds occur in areas underlain by rock, such as may occur in some of the forested areas, these are unlikely to be able to re-establish a continual stream bed and flows will not occur until the pond is overtopped.

Any impacts due to subsidence related ponding should be able to be effectively managed with suitable monitoring and timely response in mitigating any adverse effects. The timing of any inspections and/or testing needs to consider the fact that as subsidence effects travel across the ground surface, the "edge" of the settlement bowl results in localised deformation referred to as either tilt or sometimes travelling strain.

Where the tilt/travelling strain occurs along stream beds/banks, instability due to erosion from increased stream flows can occur. In general, the risk of mining causing an increase in erosion is most likely to occur during "normal" stream flows and smaller, albeit more frequent flood events.



The ability of the mine, locals, Council, or other authority to say what is adverse and what would or could have been expected to occur pre-mining will be nigh on impossible to ascertain and so the question what should be done in terms of mitigation or preventative works. This also impacts on who is responsible for undertaking the works.

10.4. Environmental Flows

The issue of environmental flows is beyond the expertise of PSM and comment on suitable flow volumes and/or frequency is not made.

However, while it is possible that a suitable volume of suitable quality water could be provided to the creek systems for the purpose of environmental flows, say by the W2CP in the form of treated water from that they collect from the underground mine, the benefit of any re-supply to the local waterways will be limited to the immediate stream ecology. The ability for re-supply water to the streams to fully compensate all the alluvium areas and any bores is doubtful, as discussed in Sections 9.2 and 9.3 of this report.

10.5. Mitigation and Management

WRM note that the impacts of the project on surface water resources can be mitigated through implementation of:

- Property Flood Management Plans a water quality monitoring programme for streams in the W2CP area; and
- A stream stability monitoring and management programme.

WRM suggest that the surface water monitoring in streams comprise measurement of pH, EC and TSS and be undertaken on a monthly basis, with an annual "comprehensive" suite of tests. Broadly, this level of testing is likely to be suitable but the detail on what constitutes "comprehensive" is not clear.

With regard to the management of the stream stability and remedial works, WRM propose that works comprise:

- A baseline ground survey of nominated creek cross-sections in areas of expected subsidence prior to undermining as part of the Subsidence Management Plan process.
- Development of specific measurable trigger levels (in consultation with NOW and local landholders) to enable subsidence monitoring to identify any possible unforeseen impacts to the stream system.
- Ongoing monitoring of the stream system prior to, during and after mining beneath the sections of the creek.
- A walkover assessment of key areas, particularly around the confluence of Jilliby Jilliby Creek and Little Jilliby Creek, identifying areas of water ponding, active bed and/or bank erosion and qualitative assessment of the condition of riparian and floodplain vegetation.
- Collection of photographs of creek channel and floodplain conditions.

- Preparation of a report documenting the results of each assessment with recommendations for any mitigation works that may be required. This report will specifically require a Trigger Action Response Plan (TARP) to be prepared to set aside a process for management of any unforeseen impacts to the system.

WRM suggest the field assessment be undertaken quarterly and following any significant flow event. They also note that the frequency may be reduced once an area is considered stable in terms of subsidence. Broadly this set of works is appropriate.

However, it is not clear whether this approach is entirely "reactive" or will endeavour to be "pro-active" in nature. We recommend that the WACJV should act to prevent erosion rather than repair it, as this would be best practice.

10.6. Findings

The proposed approach of undertaking detailed baseline studies of the streams in the W2CP area as well as the water quality and ongoing inspection and assessment of the impacts on stream stability and flows is considered appropriate and best practice, provided the approach incorporates a pro-active approach to issues such as stream stability wherever these are identified prior to mining impacts occurring.

If the mine is approved, the issue of assessment of what is adverse, the means of measurement and assessment and mitigation must be carefully and fully detailed to prevent long and potentially futile arguments occurring. To this end, specific and measurable/quantifiable targets must be agreed and established so all parties understand where they stand.

The issue of baseflow loss was presented earlier in this report under Section 8.

11. ADAPTIVE MANAGEMENT AND MONITORING

In recent years a trend has developed for adopting, so-called, Adaptive Management to deal with uncertainties in respect to future impacts on groundwater and surface water systems from mining operations. This developed to the point that adaptive management involved changing the targets that were established in environmental impact statements in response to what actually occurred in the field. This was done in conjunction with the establishment of groundwater monitoring systems and the visual and flow monitoring in creeks and rivers.³

The fallacy of this approach was determined by the Land and Environment Court in a recent case (2013) in regard to the proposed expansion of Berrima Colliery. The judges found as follows with respect to Adaptive Management:

Adaptive management regime

The intention of the Water Management Plan is to provide an adaptive management regime, under which management actions would be modified in response to the results of the monitoring program. Preston CJ held that,

"in adaptive management, the goal to be achieved is set, so there is no uncertainty as to the outcome and conditions requiring adaptive management do not lack certainty, but rather they establish a regime which would permit changes, within defined parameters, to the way the outcome is achieved."

It follows that it is necessary for there to be precise limits imposed on the cumulative operations of the colliery.

The judges went on to quote Judge Preston in a previous case in relation to the need for implementation of the precautionary principle when there is uncertainty in respect to future environmental impacts. They stated:

Preston CJ held in *Telstra* at [150], the following, in regard to the precautionary principle and the shifting of the evidentiary burden of proof.

'If each of the two conditions precedent or thresholds are satisfied – that is, there is a threat of serious or irreversible environmental damage and there is the requisite degree of scientific uncertainty – the precautionary principle will be activated. At this point, there is a shifting of an evidentiary burden of proof. A decision-maker must assume that the threat of serious or irreversible environmental damage is no longer uncertain but is a reality. The burden of showing that this threat does not in fact exist or is negligible effectively reverts to the proponent of the economic or other development plan, programme or project.'

We are satisfied that the precautionary principle is activated as the risk of significant environmental harm currently remains uncertain,.....

³ For example: responses to cracking of Cataract Creek and Waratah Rivulet in the Southern Coalfields; draining of swamps at Springvale Colliery in the Lithgow area, complete depressurisation of the groundwater systems at Berrima Colliery and Ulan Colliery, and major cliff collapse at Dumbarton Colliery, Nattai North Colliery, Katoomba, Newnes and Baal Bone Colliery

The judges determined that the proposed expansion of Berrima Colliery should not proceed on the basis of Adaptive Management as was proposed by the colliery owners.

We consider that the legal findings summarised above should be taken into account in respect to the proposed Wallarah 2 project, because future impacts on groundwater and surface waters are likely to be substantial to both town water supplies in drought periods, and to agriculture and flora and fauna under even average climatic conditions. Furthermore, there are substantial uncertainties in respect to these impacts, making it possible, and even probable that the impacts will be greater than assessed by the EIS.

12. CONCLUSIONS

12.1. Subsidence

The predicted impacts due to W2CP are, in general terms:

- Subsidence up to 2.6m with less subsidence predicted in residential areas to the east and more subsidence within forested areas to the west.
- Tilts up to 15mm/m concentrated above the edges of the panels and over forested areas
- Tensile strains up to 4mm/m concentrated near the edge of panels. About 99% of these strains are expected to be less than 2.5 mm/m.
- Compressive strains up to 5.5 m/m concentrated about 50m inside the panel edges. About 99% expected to be less than 3.3 mm/m.
- Far field movements up to ~60 mm horizontally at a distance of around 1km from mining diminishing to less than 25 mm at a distance of 2 km.
- The expected number and severity of impacts across the 245 properties within the area affected by the predicted subsidence are:
 - 83% of properties being unaffected;
 - 12% requiring very minor to minor repair;
 - 5% requiring substantial to extensive repair, and
 - <0.5% requiring a complete rebuild (ie. about 1 property)

In summary we conclude that:

- Based on our discussions with W2CP, we understand that something like 4 to 5 panels would need to be extracted before a full model calibration exercise could be undertaken.
- The reliability and accuracy of the SCT method is unknown as:
 - There is a reliance on extrapolated inputs to which the method has been shown to be sensitive.
 - The model is calibrated to site-specific data, and not to a small number of measurements from other sites.
 - The sensitivity to most input parameters is not presented.
- Due to the empirical nature of the method the Incremental Profile Method (IPM) is only as reliable as the data to which is it calibrated, in this case the SCT model results. Therefore the reliability and accuracy of the IPM is in doubt.

This is to some extent recognised by MSEC who in the EIS state:

"A thorough calibration . . . will only be achieved after subsidence monitoring data is obtained and analysed".

- The use of one predictive model to calibrate another is generally unwise and not widely regarded as best practice.



- The IPM is stated as being conservative and likely to over predict impacts. The evidence for this conservatism and the expected magnitude with respect to W2CP are not provided. Indeed all indications are that the model development is centred around matching expected conditions and not exceeding or over-predicting them.
- There is a reliance on pillar compression after extraction resulting in a smoother subsidence profile. However, the basis for this assumption appears to conflict the Geological Report (Appendix C), where significant variation in both roof and floor conditions is expected across the site.
- The EIS acknowledges that pillar compression may not occur but does not quantify the impacts or changes in impact should this not occur.
- First longwall will prove that this pillar compression assumption is valid.
- At least 3 longwalls (L1N to L3N) and more likely 4 to 5 longwalls are required before pillar compression theory can be verified.

We accept that these predicted impacts are in agreement with expectations based on measured subsidence impacts elsewhere, and the Newcastle and Southern Coalfields in particular.

We are in general agreement that should the predicted level of subsidence occur, the type distribution and severity of impacts on houses, buildings and infrastructure is likely to be similar to that stated in the EIS.

We do not agree that the prediction represents a conservative estimate of subsidence impacts as all the evidence presented in the EIS suggests the prediction represents the most likely impacts. We consider that the model, calibration and application of the prediction does not provide sufficient guidance as to the sensitivity and reliability of the method and may, therefore, fail the Director General's "reasonable level of confidence" test.

In general we did not find any omissions or evidence to suggest that subsidence due to W2CP is likely to be significantly different to that predicted by the EIS. Our main concern is the lack of certainty around the predictive method and the likely variation in prediction based on observed variations that are already known and potentially those unknown.

12.2. Groundwater

The conclusions reached by EIS are primarily the result of the input parameters adopted for their numerical modelling. These input parameters are primarily driven by the unsuitable method by which the makeup of the rock and its defects have been sampled and are not consistent with available data or modelling within the EIS. Further, modelling assumes recharge of the water system based on average climatic conditions.

The EIS implies that water inflow to the mine, of up to 2.5ML/day would largely come from water stored in the ground. However, it avoids the fact that water stored in the ground comes from somewhere, and is currently in equilibrium with natural recharge. A valid way to consider this matter is encapsulated in the following quotation from Dr Rick Evans, principal hydrogeologist of Sinclair Knight Merz, viz:

"There is no free lunch here. It's very simple – every litre of water you pump out of the ground reduces river flow by the same amount".

Australian Financial Review,
24 May 2007

Other points to note are:

- We cannot define precisely what portions of which rivers will be affected by leakage losses from the near surface alluvial lands into the deeper rock mass;
- We cannot say, with confidence, how many years it will take for the impact of underground extraction to reflect in surface flows, and
- The EIS states that the mine will not fully recover groundwater pressures for over 500 years.

These points, combined with the uncertainty on the input parameters to the groundwater modelling there is a high probability that leakage losses from the alluvial lands will impact the surface water. Given the high likelihood or even near certainty that climate impacts would be sufficiently severe at some point implies that it may affect visible flows for long periods.

On balance, the findings from the EIS are at the least a limited and probably unconservative view of potential impacts. This means that, at present, it is not known with an acceptable level confidence what the likely impacts of the Wallarah 2 longwalls will be on groundwater resources, and on groundwater that feeds into the streams of the Dooralong and Yarramalong Valleys.

12.3. Surface Water

Flooding

The results of the flood assessment appear reasonable given the limits of the prediction of subsidence and can be considered as "best practice".

The discussion on the impacts of the W2CP on flooding are made in relation to the 1% AEP event (1 in 100 year) and would only fully come into effect after mining has been completed. It is important to note that the assessment of flooding is dependent on the



expected subsidence and so any change to mine plans, or the prediction of subsidence through any validation process will result in changes to the extent and impact of flooding.

Results of the flood modelling for the 1% AEP flood event indicate that subsidence from the current W2CP mine plan is likely to result in only relatively minor increases in the depth and extent of flooding compared to current, pre-mining estimates with a total of about 35Ha of additional land becoming affected across the whole W2CP area.

The changes to flooding extents will have an adverse effect on up to 10 properties. The impact is assessed to be up to 5% of additional land area inundated for 4 of these Properties and up to 20% of additional land area for the remaining 6 properties.

In terms of impacts on residential dwellings, a total of 5 properties that were not previously impacted by the 1 in 100 year flood level are now impacted by flood water depths of between 4cm and 1.27m above floor level. These are assessed as being Major impacts in the system of Flood Impact Categories adopted for the W2CP. In addition to these dwellings, a further one dwelling is Categorised as being subject to a Major Impact, in this case the expected 1 in 100 year flood level increase by up to 41cm above current, pre-mining predictions.

In the moderate flood impact category, a total of 8 dwellings will see a rise in the currently predicted inundation levels due to the 1%AEP event by between 3cm and 17cm. A further 3 dwellings will have the level of clearance, or freeboard between the predicted flood level and dwelling floor level reduced to values of between 4cm and 28cm.

Minor impacts are expected to occur to a total of 10 dwellings and comprise increased levels of flooding above floor level by between 1cm and 4cm and reduced levels of freeboard above flood levels.

Further to the dwellings described above, a total of 14 dwellings are expected to have no significant change in flood impacts while a total of 49 properties will see a slight reduction in flood impacts.

Other impacts of the subsidence on flooding are flood peak flows are anticipated to be slightly reduced with a minor increase in the duration of the peak, although the EIS notes these as being insignificant.

Flooding will impact a total of 30 primary and secondary access roads in the project area. Of these, only 6 primary access route low points will be adversely impacted by the mine. Adverse impacts comprise increased duration of flooding of between 1hour and up to 27 hours. The latter time pertains to the crossing (D50) located toward the southern end of Jilliby Road just north of the intersection with Watagan Forest Drive.

Mitigation of the impacts of flooding can readily be undertaken by the WACJV. Detailed plans for each location and/or dwelling are not provided at this stage of the process and are only required after approval has been given.

At this time, the only indication of the extent of potential mitigation is in relation to the Major and Moderate Impact Categories.

Preliminary descriptions of possible mitigation works presented in the EIS comprise:

- Raising or relocating dwellings;
- Raising Sandra Street to increase the upstream flood retarding storage;
- Construction of grassed earthen levees around dwellings to provide a minimum freeboard of 0.3m, and
- Construction of new replacement dwellings.

The purchase of dwellings is mentioned as an option, but is not linked to any dwellings in the EIS, nor is any mechanism or process for such an option canvassed.

In terms of primary access points, the six adversely affected locations can be raised after subsidence has occurred to mitigate the adverse effect. In some instances, the works may require new culvert works to facilitate passage of flood waters past the obstacles. Council must be conscious of the longer term maintenance requirements of any mitigation measures.

The discussion on potential flood mitigation measures remain at a feasibility level but are considered appropriate and to constitute "best practice" for this level of appraisal. Detailed assessment will be required if planning approval is given and this must ensure all the Director General's requirements are met.

Loss of Surface Water

Loss of surface water from streams in either the Yarramalong and/or the Dooralong Valley will have a direct impact on the availability of water in the Wyong River downstream of the proposed mine which is used as part of the water supply to the Wyong and Gosford Local Government Areas. Further, loss of surface water will also affect businesses such as turf farming and supply of water to local bores.

The assessment of loss of surface water is entirely dependent on the inputs to groundwater modelling and the impacts on groundwater flow by the mine. The EIS concludes that there will be very little impact on leakage from the near surface alluvial lands due to the very low permeability of the rock below the alluvial lands and, that what loss does occur will be readily compensated for by surface recharged.

These statements are based on two assumptions. Firstly, that average climatic conditions prevail and secondly, a favourable view of the permeability of the rock below the alluvial lands. The latter point is discussed above under the topic of groundwater modelling, but suffice to say there is considered to be a high level of uncertainty and a lack of factual evidence to confirm the parameters used.

With regard to the first point above, for the EIS to be relevant, it must also consider the variation in inputs to the surface water supply in extended dry periods. The review in this report considers the flow in Jiliby Jiliby Creek between 1972 and 2013 to illustrate the sensitivity of the stream flow to climate and to small variations in flow volumes, viz:

- The median flow rate in the creek is about 4.5 ML/day.
- Flows of less than 1ML/day occurred for 24% of the time
- Flows of less than 0.1 ML/day for 10% of time.



The predicted water inflow to the mine of up to 2,5ML/day represents more than half of the average flow for Jilliby Jilliby Creek and is greater than the flows recorded for 40% of the time since 1972.

These flows are put into perspective when records of consecutive days, since 1972, where low flows considered. The five longest periods of consecutive days when flow was less than 1 ML/day and 2 ML/day range from 112 up to 190 days. This shows that when dry periods occur, the flow in the creeks can be expected to be at a level that may be readily affected by leakage losses from the alluvial lands.

Further, a review of the climate during this period reveals that while some periods of drought did occur such as the Millennium Drought, it does not include the experience of the more intense droughts of World War 2, and the time of Federation.

Ponding

Current predictions of subsidence indicates three locations where increased bowls of storage in ponds along Jilliby Jilliby Creek (2 No.) and Little Jilliby Jilliby Creek (1 No.) are expected to result in longer and/or more frequent periods of drying downstream and similarly of wetting upstream of the newly created pond.

The expected extent to which the stream and adjacent lands may be impacted upstream and downstream of the pond is difficult to predict, but is not expected to be more than 500m and in all likelihood would be less than say 100m. Given the generally cleared/settled nature of the floodplain areas, the potential for drying conditions to adversely impact native flora and fauna is minimal. Any impacts should be able to be effectively managed with suitable monitoring and timely response in mitigating any adverse effects.

These conditions are expected to prevail until such time as the streams re-establish a continuous stream bed. This is highly likely to occur where the ponds occur in the more silty and sandy alluvial soils along the creeklines, but may be much restricted if the ponds occur in areas of heavy clay. The timeframe for these changes depends on the soil types and also the flow velocity and frequency where the stream is ephemeral.

The potential for ponding in Wyong River is considered negligible under the anticipated subsidence.

Subsidence profiles along the Hue Hue Creek have not been provided and so assessment of impacts of mining have not been made.

Erosion and Environmental Impact

The EIS notes that there is active erosion occurring along the banks of the Jilliby Jilliby Creek, but also that the impacts of the project on surface water resources can be mitigated through implementation of:

- Property Flood Management Plans a water quality monitoring programme for streams in the W2CP area; and
- A stream stability monitoring and management programme.

As with the subsidence and flooding, the W2CP is not required to prepare detailed management plans at this stage of the process but has included some indication on the approach and works within the specialist reports. Broadly the set of works and frequency suggested is considered appropriate but requires a significant amount of detail to allow any worthwhile appraisal to be undertaken of its likely effectiveness. However, it is not clear whether the approach is to be entirely "reactive" in nature, or whether it will include some form of "pro-active" works.

We recommend that the WACJV should endeavour act to prevent erosion rather than repair it where appropriate, as this would be best practice.

The ability of the mine, locals, Council, or other authority to say what is adverse and what would or could have been expected to occur pre-mining will be virtually impossible to ascertain and so the question is what should be done in terms of mitigation or preventative works. This also impacts on who is responsible for undertaking the works. In order to prevent this, and other similar issues from resulting in futile and circular arguments that result in nothing being achieved or done, specific and measurable/quantifiable targets must be agreed and established so all parties understand where they stand if the mine is approved.

12.4. Borefields

Borefields have been developed at Woy Woy, Somersby, Mangrove Creek, Ourimbah and Mardi for use by the CCWC as a drought contingency measure. Of these, only the single, 150m deep bore at Mardi is potentially going to be impacted by the W2CP. This bore is about 3km from the southern extent of the mine.

The Mardi bore is thought to extend into the rock of the Tuggerah Formation, or possibly to the top of the Munmorah Conglomerate. The main coal seam in this location is at a depth of about 450m to 500m.

The EIS predicts piezometric drawdown levels in the location of bore will not occur during the period of mine operations. However, drawdown of up to 5m may occur after a long period of time (500 years after mining)

These predictions appear to assume that nearly all of the water inflow to the mine is from that stored in the ground. Hence the predicted drawdown is expected to represent a worst case. If, as we consider likely, a portion of the water flowing into the mine comes from the alluvial lands above the mine, then the impacts at locations such as the Mardi bore will be less than predicted by the EIS.



12.5. Risk Assessment and Adaptive Management

In terms of groundwater impacts and to a lesser extent surface subsidence, the EIS presents an abridged assessment of the potential impacts and hazards posed by the W2CP. This situation arises as the EIS only considers risks that have been modelled by the specialist consultants and is thereby limited by the specialist assumptions and either lack of or limited sensitivity assessments. This is not considered appropriate at this stage of the assessment where transparency as to the entire gamut of potential impacts should be canvassed.

Further, the consequence rankings at the high end of assessment have been combined and limit the risk assessment process by requiring that severe, long term and/or potentially irreversible impacts must also be wide spread to warrant a high ranking.

In order to begin to allow the impacts of the project to be managed via adaptive management, the understanding of the impacts and risks must be robust and comprehensive, and quantitative in nature, not qualitative as is the case here.

The risk assessment should consider the level of risk associated with all aspects of the W2CP, and in particular those that:

- a. Are associated with a high level of severity in terms of consequence.
- b. Have a high degree of uncertainty surrounding the assessment/modelling.
- c. Have consequences that either may not/cannot be able to be remediated, mitigated or managed once they are observed, or
- d. Represent a significant degree of community concern.

The results of a rigorous, qualitative risk assessment could then be considered with respect to acceptable levels of risk, and/or a cost/benefit assessment. The latter of which may, or course result in high consequence impacts with a low risk and/or cost impact being disregarded in the final assessment of the project. However, as stated above, they all need to be considered and presented so an informed judgement/decision can be made.

In terms of the aspects of the project covered in this report, we would recommend the following be subject to a detailed risk assessment process.

1. Ground Water Impacts – test the sensitivity of the baseflow water losses with respect to hydraulic conductivity, level of subsidence induced by mining and environmental factors such as drought.
2. Subsidence Impacts – test the magnitude and location of subsidence effects with respect to items such as variability of the roof conditions of the mine and strength of pillars.

If the impacts of the mine are to be managed via adaptive management then a risk assessment is essential in order for the process to be

- i. Correctly focused; and
- ii. Establish realistic and measurable targets.

Following this, and possibly with the assistance of a cost/benefit assessment, for an adaptive management plan to be effective it must be based on targets for monitoring and assessment that are:

- specific;
- measurable; and
- agreed between all parties.

Further, the targets must be accompanied by agreed responses otherwise the management system would be reduced to an impotent and disingenuous process.

Agreed responses may be as minor as "continue to monitor / watch" to potentially leaving coal below the alluvial areas unmined or even as strong as "cease mining".

13. MANAGEMENT PLAN DEVELOPMENT/APPROVAL CONDITIONS

Measures to mitigate and/or remediate the impacts of subsidence, increased flooding of dwellings and erosion are discussed in the EIS. However, the discussions are relatively general in nature and can only be considered appropriate for the feasibility stage of the project.

The EIS and Regulatory requirements are such that detailed Subsidence Management Plans (SMPs) need only be developed in consultation with landowners, Council and other stakeholders for adversely affected properties and streams after any approval has been granted. This would be expected to invoke the "Adaptive Management" approach for the project, for which there are very significant concerns given the level of uncertainty and lack of a comprehensive risk assessment for the all the possible project impacts.

The following table sets guidance on matters such as monitoring, validation and further assessment requirements, particularly in areas where information is unclear or uncertainty on data and/or impacts is high. The guidance provided below is intended for consideration by approving authorities in the assessment of the EIS and, if applicable the setting of conditions for the approval of the W2CP.

It is possible that approval could be given subject to the satisfaction of conditions prior to commencing mining. In such a scenario it would be expected that the decision of when to assess the conditions or undertake further studies would typically at the discretion of the W2CP as the risk of not meeting any conditions is theirs to evaluate.

**TABLE 12
GUIDANCE FOR FURTHER ASSESSMENT / VALIDATION AND MONITORING**

ITEM / AREA OF UNCERTAINTY	IMPORTANCE (Low, Medium and High)	MEASURES
Subsidence	High	<p>Accurate measurement of surface subsidence is expected to be undertaken by the mine if and when mining occurs. This must be calibrated against an accurate map of conditions prior to mining.</p> <p>The record must also include detailed survey of all properties, infrastructure and structures that may be affected by subsidence along with comprehensive dilapidation assessments. Agreement with all stakeholders and landowners must be gained as to the extent and infrastructure to be assessed for impact due to subsidence.</p>
Subsidence Model	High	A hold point after an agreed number (possibly 5) of longwalls have been extracted and the SCT and MSEC models validated and recalibrated as necessary.
Subsidence – potential variability in modelling results.	Medium	The influence of UCS – Sonic correlation UCS – modulus correlation and stress regime on the prediction of subsidence must be validated – as is proposed by the EIS.
Subsidence – impact of pillar yielding on subsidence and the ability to validate predictions	Medium	A comparison of impacts with and without the influence of pillar yielding. A program of pillar performance measurement including convergence measurements and extensometer readings.
Mine Plan	Medium	<p>It is likely, or even inevitable that the Mine Plan and layout of longwall panels will change during the life of the mine. This is particularly so after the process of validation of the subsidence modelling has been completed following initial mining of the first longwall panels (minimum of 4)</p> <p>Modification to the Mine Plan and longwall panel layout will alter the extent and location of subsidence and the location of impacts on flooding, access routes and stream flows.</p> <p>A clear process must be setout for the assessment and approval of revised mine plans and must include Council. Assessments of the impacts of Mine Plan change include subsidence magnitude and extent, potential impact on groundwater modelling, impact on flooding and stream flows/ponding.</p>

**TABLE 12
GUIDANCE FOR FURTHER ASSESSMENT / VALIDATION AND MONITORING (Cnrd)**

ITEM / AREA OF UNCERTAINTY	IMPORTANCE (Low, Medium and High)	MEASURES
Sampling of rock mass – impacts on groundwater modelling	High	<p>In order to confirm the EIS assumption and reduce uncertainty on the extent and connectivity (tortuous) of the defect system within the "aquatard" which is relied upon in the modelling factual data should be provided. If this data is not available then within the existing mine database, or other sources additional exploration cored boreholes drilled at an angle to the horizontal plane of say 60° should be implemented. Drilling would need to be undertaken in the Dooralong Valley and in the lower reaches of the Yarramalong Valley to target rocks below the alluvial soils. Drill holes to extend to at least the base of the "constrained zone" from subsidence modelling. The location and number of such holes is not recommended here, but should be of sufficient number to provide confidence in the result when used in conjunction with other available data.</p> <p>These angled holes could also be used to undertake further in-situ permeability testing by means such as Packer or Constant Head testing.</p>
Permeability of Patonga Claystone – impacts on groundwater modelling	High	<p>Specific testing of the permeability of the rock mass below the alluvial soils in the valleys be undertaken to confirm EIS assumptions, or otherwise. The assumptions, and hence impacts of the EIS groundwater modelling must be confirmed prior to mining below any alluvial areas.</p> <p>Testing to be in inclined, cored boreholes. Holes must be logged to allow permeability testing to be carefully targeted to allow assessment of vertical and horizontal defects. Possible methods to test the rock mass permeability comprise:</p> <ul style="list-style-type: none"> • Packer testing. • In-situ Constant Head testing. • Full scale in-situ pump testing targeting the impacts of dewatering below the Patonga Claystone formation. We acknowledged that these tests are expensive and time consuming and alternate methods may be appropriate. We recommend the former two methods be employed as a first phase of testing. <p>Testing should comprise a suitable number of locations and successful tests to be meaningful. The final number is likely to be subject to the results of the works at the time. A minimum of 6 test holes is suggested.</p>

**TABLE 12
GUIDANCE FOR FURTHER ASSESSMENT / VALIDATION AND MONITORING (Cnrd)**

ITEM / AREA OF UNCERTAINTY	IMPORTANCE (Low, Medium and High)	MEASURES
Impact on Groundwater Levels	High	<p>Should the mine be approved a comprehensive system and regime of groundwater level monitoring must be implemented.</p> <p>This will require a robust system of new and existing monitoring wells and/or piezometers that are able to survive the predicted subsidence impacts.</p> <p>Monitoring points must be read on a frequent basis and compiled into a central database which is not only open for access by Council, but the data must be reviewed and assessed for its 'meaning' on a regular basis.</p> <p>This system should be augmented by measurement of levels and yields from water bores in the valleys.</p>
Impact on Stream Flows	High	<p>Monitoring of streamflow and inputs that influence alluvial lands water table recharge must be ascertained to allow assessment of the impact of groundwater leakage/loss. Aspects that must be monitored include:</p> <ul style="list-style-type: none"> • Rainfall and runoff across the catchment area for Wyong River and Jilliby Jilliby Creek, • Stream Flows – measured at multiple points along the various streams. As a minimum this must comprise <ul style="list-style-type: none"> ○ Jilliby Jilliby Creek upstream of the mine area, upstream and downstream of the confluence with Little Jilliby Jilliby Creek and just upstream of the confluence with Wyong River. ○ Wyong River upstream of the mine area - say at Duffy's Point, just upstream and downstream of the volcanic intrusion along the southern edge of the mine – say about 500m upstream of Chandlers Creek and about 700/800m upstream of Kidmans Lane, just upstream and downstream of the confluence with Jilliby Jilliby Ck. ○ Little Jilliby Jilliby Creek just upstream of the confluence with Jilliby Jilliby Creek and say just as the creek enters the upper forested area. <p>These points could also be used to monitor water quality as necessary.</p>

**TABLE 12
GUIDANCE FOR FURTHER ASSESSMENT / VALIDATION AND MONITORING (Cnrd)**

ITEM / AREA OF UNCERTAINTY	IMPORTANCE (Low, Medium and High)	MEASURES
Flood Remediation to Access Roads	Medium	<p>The impact of potential remedial works to access roadways must be understood prior to undertaking such works with regard to the impacts on future flood levels. Models for the 1%AEP and 20% AEP must be developed, assessed and agreed.</p> <p>Further, the method and design of remedial works and the maintenance implications for the future must be understood and agreed with Council.</p>
Stream Stability (and ecology)	Medium	<p>Specific and measurable/quantifiable targets must be agreed and established concerning stream stability and the impacts on erosion (as well as flora and fauna) so all parties understand where they stand if the mine is approved.</p> <p>This is particularly so given the very difficult nature of assessment of what is adverse and what is not as a result of the mine.</p>
Risk Assessment	High	<p>A detailed and comprehensive risk assessment must be undertaken to provide a framework against which reasonable adaptive management programmes can be developed, and assessed.</p>
Adaptive Management	High	<p><u>Specific, measurable and agreed</u> targets or levels from monitoring MUST be established prior to any underground works to allow all stakeholders certainty about what the aims of any adaptive management programme are. These should be based on the results of a comprehensive quantitative risk assessment and possibly cost/benefit assessment.</p> <p>Targets may include loss of stream flows, lowering of water levels/pressures in monitoring bores and levels of subsidence.</p> <p>Further, the targets must be accompanied by agreed responses otherwise the management system would be reduced to an impotent and disingenuous process. Agreed responses may be as minor as "continue to monitor / watch" to as strong as "cease mining" or to quarantine sensitive areas from mining.</p> <p>It may be considered that it is not possible to sufficiently confirm through monitoring the level of streamflow loss. In that case it may be that a proportion of the mine inflow water is deemed to be from streams and an agreed method and distribution of this proportion of mine water is treated and repatriated to streams, users/residents and areas of significant flora.</p>

**TABLE 12
GUIDANCE FOR FURTHER ASSESSMENT / VALIDATION AND MONITORING (Cntd)**

ITEM / AREA OF UNCERTAINTY	IMPORTANCE (Low, Medium and High)	MEASURES
Independent Impact Monitoring Authority	Medium	<p>An independent body be established to install, monitor and maintain all the groundwater, surface water and surface level impacts of the mine both during and after operation – this is particularly so given the EIS stated length of impact on groundwater and uncertainty on the speed with which pillar yield may impact subsidence.</p> <p>This body <u>must</u> be guaranteed funding to not only establish the monitoring system, but to maintain it as the impacts of subsidence and the long mine life will require significant repairs and timely replacement of equipment and monitoring points/instruments. Indeed, replacement of instrument/monitoring points should not take longer than say 2 months to maintain continuity of measurements.</p> <p>It is also recommend the monitoring authority be given either a direct, or at the least oversight role in the assessment of impacts and on the assessment of compensation for damage/loss or the development of remedial works/measures to control/limit the impacts of the mine – judged against the specific targets of the Adaptive Management Plan – and as such must be able to undertake, or direct the mine to undertake additional investigations and/or assessments with regard to subsidence, groundwater and surface water.</p> <p>The records and recommendations of the authority should be available on the public record.</p>

For and on behalf of
PELLS SULLIVAN MEYNINK



DEREK ANDERSON



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Walarah 2 Coal Project

Wyong, NSW, Australia

Review of 2013 EIS

Prepared for



By



EARTH SYSTEMS
Environment | Water | Sustainability

June 2013



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Executive Summary

Earth Systems has undertaken a detailed review of the 2013 Wallarah 2 Environmental Impact Statement (EIS) for the Wyong Shire Council (WSC).

The Wyong Areas Coal Joint Venture (WACJV) proposes to develop an underground coal mine known as the Wallarah 2 Coal Project. This Project would extract coal using longwall mining techniques from under the Dooralong and Yarramalong Valleys in Wyong Shire, New South Wales.

In 2010, WACJV submitted an EIS which was refused by the NSW Government for the following reasons.

"The reasons for refusal of the project application are as follows:

- *Uncertainty around the subsidence predictions for the project, particularly in the western portion of the site under Jilliby Conservation Area and the Wyong State Forest;*
- *The project does not adequately address potential surface water quality impacts, resulting in uncertainty around the ability of the project to meet acceptable water quality outcomes;*
- *Uncertainty around the ecological impacts of the project, particularly in the western portion of the site, as a result of a lack of ecological survey effort combined with uncertainty as to subsidence predictions in this area.*
- *Uncertainty around the heritage impacts of the project, particularly in the western portion of the site, as a result of a lack of heritage survey effort combined with uncertainty as to subsidence predictions in this area.*
- *In light of the above, the project is not considered consistent with the principles of ecologically sustainable development, including the precautionary principle, and as a consequence is not considered to be in the public interest."*

A revised EIS was submitted by the proponent in 2013.

As a key stakeholder, WSC has a role to ensure that all relevant impacts and risks associated with the Project are professionally investigated and assessed to protect the interests of the Shire's residents and the environment. WSC engaged Earth Systems to independently review and evaluate the revised EIS and provide expert advice on the potential environmental and planning issues related to the Project. Earth Systems has been instructed to review all aspects of the EIS apart from subsidence, ground and surface water hydrology, and flooding which are being reviewed for WSC by another technical group.

The EIS documents have been reviewed for accuracy, technical competence, statutory compliance and conformance with Australian standards and guidelines and international best practice within the mining industry. A number of technical specialists and environmental impact assessment (EIA) experts from Earth Systems have contributed to the review.

Environmental Impact Assessment should be a thorough and consultative process involving specialist and multi-disciplinary inputs. Although many aspects and components of the Wallarah EIS appear to have been conducted competently, and are improved from the 2010 EIS, there are still some significant uncertainty and gaps in the EIS.

In general the EIS reaches the conclusion that there will be few significant adverse impacts (apart from subsidence and some flooding) as a result of Project development. This appears overly optimistic

considering the sensitivity of the project setting close to a significant population centre and in a catchment that supplies water to the Central Coast population.

Management, monitoring and risk mitigation measures are often poorly articulated. In particular, the assessment of water quality impacts and air quality impacts appears to be flawed or inadequate in some key areas.

The EIS details very few clear commitments regarding management, monitoring and risk mitigation providing key stakeholders with little confidence that their assets and values will be protected by the Project should it proceed.

Further specific findings of the EIS review are as follows:

Structure and Approach

1. The EIS should fully consider and assess the different phases of the mine. The EIS does not adequately assess construction impacts, focusing primarily on operations. Impacts and issues associated with air quality, water quality and transport are likely to be significantly different during construction. The EIS does not adequately consider closure planning and no assessment of potential closure impacts has been undertaken. The EIS does not demonstrate that the Project would be closed in a manner that safeguards the environment and community assets.
2. The Proponent's risk assessment and cost benefit analysis is based on the results of the EIS. The risks, benefits and costs associated with the Project need to be re-rated based on the knowledge gaps and uncertainties that remain and the findings of further recommended studies.
3. An Environmental Management System has not been developed for the Project, nor is there a commitment to develop such a system.
4. The project proponent has not committed to regular independent environmental audits throughout the project life cycle. However, the project proponent has committed to developing an Annual Review Report to systematically assess performance and identify areas for improvement.

Stakeholder Engagement

5. The Proponent has still failed to adequately engage with the community during the environmental assessment process and consequently limited consultation has been conducted. The EIS does not provide sufficient information on the concerns raised by the community during consultation.

Water

6. The EIS does not assess impacts on surface water quality associated with the construction phase of the Project, nor does it provide management and mitigation measures for any potential impacts. There is no contingency for the Project if development does impact on water quality or hydrology.
7. The mined materials and wallrock of the deposit have not been assessed in terms of their ability to leach acid and metalliferous drainage (AMD). This is a significant oversight as AMD / saline drainage can be one of the most long-lived environmental impacts from coal mining.
8. The surface water monitoring program does not include a sampling point immediately downstream of the proposed Wallarah Creek tributary discharge site
9. The EIS does not provide contingency for overflow of untreated mine water from the Mine Operations Dam (MOD) in the event that overflow may occur.
10. The baseline assessment for groundwater quality appears to have included measurement of only pH and TDS, neglecting other key analytical parameters and therefore not providing a suitable baseline.

11. Mitigation measures for groundwater impacts are limited to repairing damaged bores from subsidence and replacing water supply if groundwater drawdown exceeds expectations. Mitigation for groundwater quality is not directly articulated.
12. The EPBC Act 'Water Trigger' Amendment (2013) has not been considered.

Air Quality

13. The methodology for air quality impact assessment does not appear to have been undertaken in a manner consistent with applicable legislation (DECC, 2005). Some modelling appears to include only Project emissions rather than Project emissions with baseline conditions. This provides a misleading assessment of likely dust levels that will be experienced by surrounding communities. Construction impacts and impacts associated with certain climatic conditions are not clearly outlined.
14. Predicted Project-related emission concentrations from dispersion modelling assume Project implementation of best practices. These estimates are only relevant provided these controls are implemented. It is unclear whether the EIS commits the Project to these management and mitigation measures.

Greenhouse Gas

15. Greenhouse gas emission mitigation strategies are very brief and do not demonstrate a sufficient level of commitment by the Proponent to reduce emissions. As such the Greenhouse Assessment does not adequately address the terms listed in the Director-General's Environmental Assessment Requirements and the Supplementary Director-General's Requirements.

Noise and Vibration

16. It is unclear whether the control measures identified in the Noise and Vibration specialist study are Project commitments or recommended best practices. The results of noise modelling are only valid if the recommended attenuation measures are committed to and implemented.
17. While noise modelling indicates that construction and operational noise will not be a major issue for the Project, modelling predicted that there may be some exceedences of Project Specific Noise Criteria (PSNC). Additional mitigation measures are not identified to prevent these exceedences.

Ecology

18. In general, an adequate ecological baseline (terrestrial and aquatic) has been provided, however, it lacks detail in regard to threatened species population distribution and abundance estimates. Ecological surveys should have been conducted over a broader survey area to reflect impacts associated with all project components.
19. Offsets required under the EPBC Act threatened species identified within the Project Boundary were not calculated using the new EPBC Act Policy Guidelines of 2012.

Traffic and Transport

20. A Rail Study has been conducted as part of the 2013 EIS to address the gaps in information regarding transport impacts identified in the 2010 EIS. This is a more comprehensive assessment of the transport route of the coal.

Visual Amenity

21. The visual assessment conducted for the Project provides a good site analysis and identification of key viewpoints, assessment of potential visual impacts and recommendations for mitigation measures to minimise impacts of the Project.

Archaeology and Cultural Heritage

22. In general, a comprehensive survey and report of the Aboriginal cultural and historic heritage of the areas surveyed within the Project Boundary has been prepared apart from some areas with accessibility restrictions.

Community Health and Safety

23. Uncertainties and knowledge gaps identified in this report including air and water quality impacts indicate that the assessment of community health and safety impacts and risks and their necessary management and mitigation measures are unlikely to be sufficiently comprehensive.

Impacts beyond DGRs

24. Contingency plans for potential disasters, whether naturally occurring or human induced, have not been included in the EIS. This is an oversight.
25. The Buttonderry Waste Management Facility is mentioned in the EIS in respect to visual amenity, however, the potential environmental risks (gas and leachate leakage) associated with the proximity of this facility to the project are not discussed.

Management and Monitoring

26. The EIS is not accompanied by management and monitoring plans. It is understood that these have not yet been prepared. Good industry international practice and / or best practice requires an Environmental Management and Monitoring Plan to be prepared as part of the EIS process. Ideally this should be accompanied by a budget indicating that the Project is sufficiently resourced to undertake this work. It is not possible to fully assess the impacts of the Project without an adequately articulated management and monitoring plan.

Recommendations based on these key findings follow.

Recommendations

It is recommended that the EIS is revised to address the gaps and deficiencies identified by this Review.

Should the EIS be approved then the consent should be conditional on the following conditions:

Air Quality

- Air quality impacts are assessed utilising relevant methodologies to ensure that detailed impact assessments of project phases are conducted effectively.

Greenhouse Gas

- A more realistic assessment of greenhouse gas (GHG) impacts is provided by including Scope 2 and 3 emissions sources in the analysis of the GHG impacts and updating impacts of the Project on anthropogenic global warming.

Water Quality

- Surface water quality is investigated further to ensure that all sources of contaminants are identified and that water sources are effectively monitored for changes associated with the Project.
- A geochemical assessment for potential AMD / salinity is conducted, including development of contingency plans for the management and treatment of the Mine Operations Dam.

EPBC 'Water Trigger' Amendment (2013)

- The EPBC Act Water Trigger Amendment (2013) is considered by the Proponent.

Ecology

- Further detailed surveys for biodiversity are conducted, including extended flora survey to establish a robust flora baseline for the Subsidence Impact Limit.
- The Biodiversity Offset Strategy for threatened species is revised to ensure it addresses the current Policy and that currently proposed offsets for fauna habitats are reviewed for suitability.

Mine Design and Layout

- Internal haulage routes are confirmed to allow assessment of potential impacts of heavy vehicle movement.

Stakeholder Engagement

- A robust Stakeholder Engagement Plan is developed that is inclusive of commitments to ongoing consultation and a structured grievance procedure.

Rehabilitation and Closure

- A comprehensive Rehabilitation and Closure Plan is prepared.

Risk Assessment and Cost Benefit Analysis

- The Risk Assessment and Cost Benefit Analysis are reviewed and revised based on detailed findings of further recommended work.

Disaster Risk Management

- A Disaster Risk Management Plan is developed to cover natural and human-induced emergencies associated with the Project. This Plan should be inclusive of specific Contingency

Plans to manage particular events, including the management / treatment of the Mine Operations Dam (MOD) and spontaneous combustion.

Community Health and Safety

- The Community Health and Safety assessment is reviewed and revised based on the findings of the further work recommended.
- Potential impacts upon the Buttonderry Waste Management Facility associated with the development of the Project are fully considered.

Management, Monitoring and Reporting

- Management and Monitoring Plans are prepared for each aspect of assessment prior to commencement of the Construction phase to clearly outline how impacts will be mitigated and managed.
- An independent expert is commissioned by the Proponent to conduct Environmental Audits of the project on a regular basis throughout the project life cycle.
- An Environmental Management System based on ISO14001:2004 'Environmental management systems – Requirements with guidance for use' is developed and implemented for the Project.

Additional specific recommendations are provided throughout the text.

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1 Introduction

1.1 Background

Earth Systems was commissioned in May 2013 by the Wyong Shire Council (WSC) to conduct an independent review of the Wallarah 2 Coal Project EIS (excluding ground and surface water hydrology, Flooding and Subsidence Impacts). The review is being conducted as part of the WSC's reviewing of the 2013 EIS.

The Wyong Areas Coal Joint Venture (WACJV) proposes to develop an underground coal mine known as the Wallarah 2 Coal Project (W2CP) (herein referred to as the Project), which would extract coal from beneath the Dooralong and Yarralong Valleys in Wyong Shire, New South Wales using longwall mining techniques.

WACJV (the Proponent) prepared an Environmental Assessment (EA) for the Project in 2010 (referred to as the 2010 EIS), which was submitted to the Director-General of the NSW Department of Planning (DoP) for assessment and approval under Part 3A of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). As part of the assessment process, the EA was placed on public exhibition from 31 March to 2 June 2010. During the public exhibition period any person (including a public authority) may make a written submission to the Director-General concerning the Project.

The development application for the Project was refused on March 3rd, 2011 by the Minister for Planning. In November 2011, Wyong Areas Coal Joint Ventures lodged a new application for development consent of a mining lease.

In January 2012 the NSW Government issued new Director General's Requirements (DGRs) for the Project (referred to herein as the 'New DGRs') that outline key issues requiring comprehensive evaluation during the environmental assessment for Project approval. The New DGRs are supplementary requirements and do not rescind obligations set for in the original DGRs for the Project, (provided 10 August 2009).

An additional supplement to the DGRs was issued by the NSW Government on 11 July 2012 (Supplementary DGRs). The Supplementary DGRs focus on the assessment of potential Project-related impacts on biodiversity, reinforcing Project obligations under the Environmental Protection and Biodiversity Conservation Act 1999 and the Environmental Protection and Biodiversity Conservation Regulations 2000. These include provisions that are summarised as follows:

- Descriptions of the controlled action;
- Descriptions of the existing environment;
- Descriptions of relevant impacts of the controlled action;
- Proposed safeguards and mitigation measures;
- Offsets; and
- Other approvals and conditions.

The Project Proponent has prepared a second Draft EIS, completed in April 2013 (herein the 2013 EIS). This report was prepared to meet the regulatory and legislative requirements of EIS in NSW, address the issues identified in the 2010 EIS refusal and to meet the original and supplementary Director General Requirements.

WSC has engaged Earth Systems to independently review and evaluate the 2013 EIS and to provide recommendations to assist the Council in ensuring Project fulfilment of environmental and planning obligations. The findings of this report will be forwarded to the Director-General as part of WSC's overall submission to the EIS.

1.2 Objectives and Scope

1.2.1 Purpose

This Report intends to provide an independent and objective review of the 2013 EIS to identify whether the relevant environmental, mining and planning issues have been appropriately investigated and assessed; whether all of the Director General Requirements have been met; and whether the shortcomings of the 2010 EIS, identified by the Minister for Planning, have been adequately addressed.

1.2.2 Aims and Objectives

The aims and objectives of the Report are to:

- Determine if the EIS achieves statutory compliance with all relevant legislation, policies and plans;
- Confirm that the EIS adequately addresses the Director-General's Environmental Assessment Requirements;
- Confirm that the EIS adequately addresses key issues identified by the Minister for Planning in the Project Refusal dated March 3rd 2011.
- Determine if the EIS has been prepared in a manner consistent with Australian and International standards and best practice guidelines.
- Confirm whether the EIS provides a comprehensive and technically robust assessment of potential impacts from the Project;
- Identify any potential important aspects or issues that have not been fully and adequately investigated and assessed; and
- Identify areas of uncertainty and further investigations and assessments required prior to Project determination and/or during the construction, operation and closure stages of the Project.

1.3 Project Overview

1.3.1 Project Location

The Project is located approximately 9 km to the northwest of Wyong township in New South Wales (refer to Figure 1-1). The proposed mining area is located wholly within the declared Wyong Mine Subsidence District and the Hue Hue Mine Subsidence District which together extend west of the F3 (Sydney – Newcastle) Freeway.



Figure 1-1 Project Location (Source: Hansen Bailey, 2013)

Two primary surface facilities are proposed for the Project. The main coal handling and rail loading facility is referred to as the Tooheys Road Site and would be located adjacent the northeast corner of the F3 Freeway and the Motorway Link Road intersection. The Buttonderry Site would include ventilation shafts, office and employee facilities and be located to the south of the Buttonderry Waste Disposal Facility off Hue Road. The majority of the underground extraction area lies beneath the Yarralong and Dooralong Valleys and Wyong State Forest.

1.3.2 Project Setting

Key land uses within the Project Application Area range from light industrial, commercial and housing developments to small townships and small farms. The western area features heavily timbered hills, most

of which are in State Forests. Agricultural land uses in the proposed subsidence area include horticultural activities concentrated in the floodplains such as turf farming, market gardens, nurseries and orchards on the foot slopes. Further up the valleys extensive grazing predominates in the narrowing floodplain.

The Tooheys Road Site is located between the F3 Freeway and an active clay quarry and tile factory. The Buttonderry Site is situated adjacent to the Wyong Employment Zone (WEZ) and the Buttonderry Waste Management Facility. The Warner Industrial Park and Warnervale Aerodrome are located southeast of the Buttonderry Site. The proposed Wamervale Town Centre (WTC) is located southeast of the Project sites. Blue Haven residential area is located approximately 3 km to the north east of the Tooheys Road Site. A sewage treatment plant is located approximately 2 km to the south east of the Tooheys Road Site. Figure 1-2 shows the two surface facilities and the surrounding land uses.

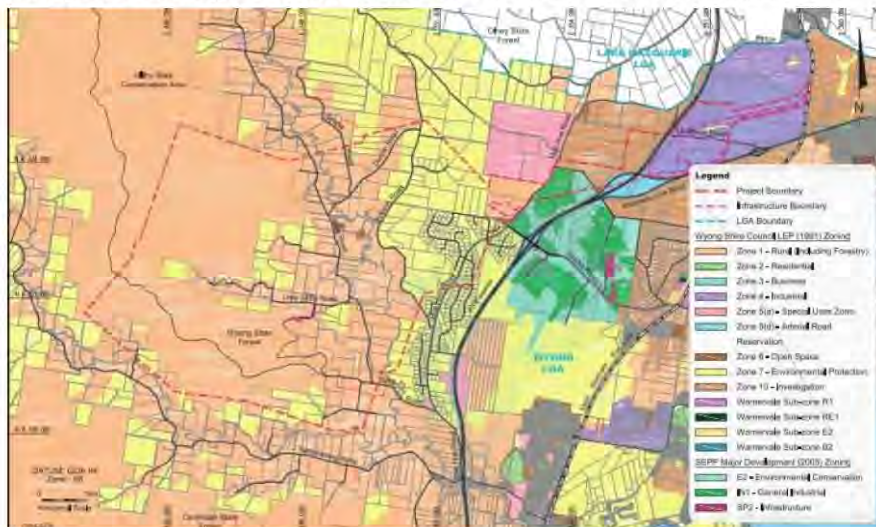


Figure 1-2 Surface Facilities and Surrounding Land Uses (Source: Hansen Bailey, 2013)

The Jilliby State Conservation Area and Wyong State Forest are located to the west of the Project area. Jilliby Creek flows south eastward to merge with the Wyong River which feeds Tuggerah Lake. Wallarah Creek flows through the Tooheys Road Site to Budgewoi Lake.

Major transport routes near the Project area include the F3 Freeway, Motorway Link Road and the Main Northern Railway Line.

1.3.3 Project Description

The Proponent proposes to extract of up to 5 million tonnes per annum of run-of-mine (ROM) coal from the Wallarah-Great Northern Coal Seam for a period of 42 years using longwall mining methods. The key components of the Project are summarised

Table 1.1 and depicted in Figure 1-3 and Figure 1-4. The Project is described in full in Chapter 3 of the EA.

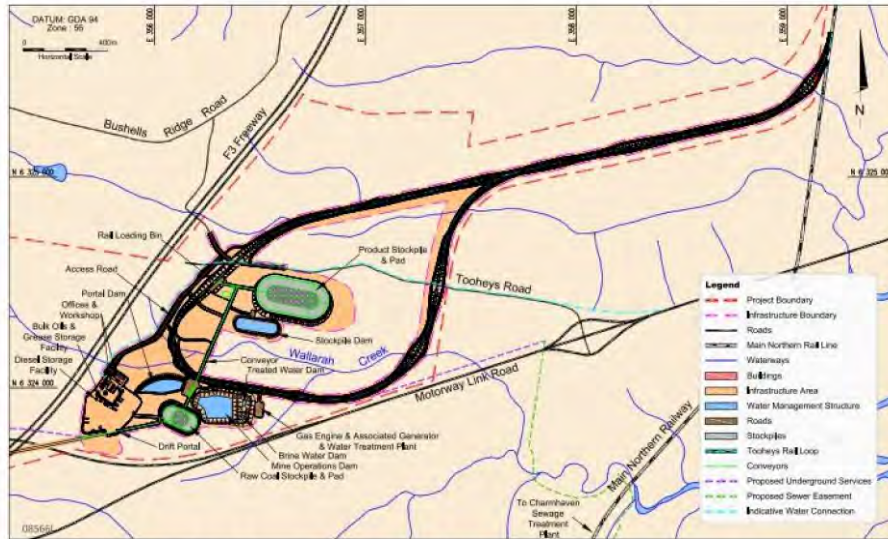


Figure 1-3 Toiheys Road Site (Source: Hansen Bailey, 2013)



Figure 1-4 Buttonderry Site (Hansen Bailey, 2013)

Table 1.1 Key Components of the Project

Aspect	Description
Project Footprint	<p>Toiheys Road Site</p> <p>This site is on Proponent owned and leasehold land and would provide the main coal processing and handling facilities, coal stockpiling and</p>

	<p>train loading facilities and include:</p> <ul style="list-style-type: none"> ○ A 6 km long rail spur and loop with two rail overbridges over Tooheys Road and coal loading infrastructure to transport coal from mine to Newcastle; ○ A coal handling plant (CHP) providing crushing, screening and storage facilities and coal stockpiles; ○ Mine access drift and portal; ○ Gas extraction and treatment plant; ○ Mine operations pre-treatment water storage dam and surface runoff settling ponds; ○ Mine water treatment plant (saline water to be treated by a reverse osmosis desalination plant); ○ Surface water management systems and sewage treatment facilities; ○ Environmental monitoring station; ○ Administration offices for up to 40 staff (only 20 staff required on average day); and ○ Car parking facilities. <p>Buttonderry Site</p> <p>This site is on Proponent owned land and would be the main site for mine employees and include:</p> <ul style="list-style-type: none"> ○ Ventilation and employee/materials access shafts; ○ Administration offices for 40 staff; ○ Bathhouse for 140 people; ○ Car parking facilities for 150 cars; ○ Surface water management systems and sewage treatment facilities; ○ Emergency services helicopter landing area; ○ Environmental monitoring station; ○ Electrical switchyard, hardstand and pollution control facilities. <p>A second western shaft site would be required by Mining Year 10 and would be located in Wyong State Forest.</p>
Mining and Reserves	<ul style="list-style-type: none"> ○ The Project is based on a coal reserve of approximately 151 million tonnes of ROM export quality thermal coal from the Wallarah-Great Northern Coal Seam. ○ The underground mining operations would use longwall mining methods at a depth of between approximately 345 m and 690 m below the surface. Longwall panel widths vary from 120 m to 250 m and extraction height ranges from 3.5 m to 4.5 m.
Coal Processing	<ul style="list-style-type: none"> ○ Coal would undergo minimal processing with no traditional coal preparation plant or washery required. The coal would be sized by a crusher and screened in the CHP. ○ Depending on the presence of minor faulting with the seam or other geological conditions that may be encountered, deshaling (a dry screening process) may be required to remove non-coal materials (waste rock).
Project Life	42 years (initial planning approval sought for 28 years)

Hours of Operation	24 hours per day 7 days per week. Shut downs may occur from time to time to allow for major equipment upgrades, repairs and maintenance.
Direct Employment	<ul style="list-style-type: none"> ○ Approximately 3,000 jobs would be created on Central Coast over the life of the Project's three year construction phase. ○ In first year of operation, the Project would generate approximately 250 jobs on the Central Coast, which would increase to 300 jobs at full production.
Access Roads	<ul style="list-style-type: none"> ○ Buttonderry site accessed from Hue Hue Road via a sealed internal road. ○ Tooheys Road site accessed from Tooheys Road, which would be slightly realigned and upgraded.
Product Coal Transport	<ul style="list-style-type: none"> ○ The majority of the thermal product coal would be railed via the Main Northern Railway to Newcastle Port for export. ○ At peak production, an average of five to six trains would be loaded every 24 hours. ○ From time to time, domestic coal trains would deliver coal to local power stations on the Central Coast.
Water Demand and Supply	<p>Water demand would vary at the two surface facility sites.</p> <p>Buttonderry Site</p> <ul style="list-style-type: none"> ○ A 10 ML Entrance Road Dam and local area site stormwater drainage system would be built to ensure sufficient water is available for use during construction. ○ Once operational, water self-sufficiency will be achieved during normal climatic conditions by harvesting clean storm water from the site for storage in the Entrance Road Dam, or directly collected from the roofs of buildings into Potable Water Storage Tanks. ○ An on-site water treatment plant would draw water from the dam and provide potable quality water for domestic consumption during drier periods when roof storm water harvesting is insufficient to meet demand. ○ During a drought period exceeding two months, it is expected that potable quality water will have to be imported. <p>Tooheys Road Site</p> <ul style="list-style-type: none"> ○ Three dams (120 ML Operations Dam, 3 ML Stockpile Dam, 3 ML Portal Dam) and site stormwater drainage system would be built to retain all dirty water runoff and ensure sufficient water is available for use during construction and eventually for mining production operations. ○ Once operational, an onsite water treatment plant would draw water from the Mine Operations Dam and provide potable quality water for domestic consumption, dust suppression and underground longwall operating requirements. ○ The site would be in water deficit during the first production year due to water demand for underground mining operations. Potable water and sewage treatment plant recycled water would be sourced from external suppliers. ○ This deficit would progressively reduce over the next five production years as mine seepage water make from underground increases as

	<p>mining progresses.</p>
Coal Stockpiles	<ul style="list-style-type: none"> ○ Coal stockpiles would only be located at the Tooheys Road Site. ○ The main product coal stockpile would have a capacity of 250,000 t. The coal would be delivered by a 2,000 t/h overhead tripper conveyor. ○ The tunnel reclaim system under the product stockpile would feed a 4,500 t/h train loading system including a loading bin of approximately 250 tonnes. ○ Automated wind-activated watering systems for dust control.
Waste Products	<ul style="list-style-type: none"> ○ The Project has a zero coal rejects target. ○ Due to the absence of a washery, coal processing would not produce stony rejects or silty tailings; hence no tailings dams are required. ○ During the construction of the mine drift and shafts, approximately 180,000 m³ of excavated waste rock would be used at the two sites for perimeter bunding and landscaping. ○ Once operational, deshaling would produce approximately one truck load of waste rock per day which would be transported off site on an "as needs" basis to Buttonderry Waste Management Facility or another nearby licensed facility.
Gas Extraction and Utilisation	<ul style="list-style-type: none"> ○ Gas content is generally restricted to the coal seam and consists of greater than 95% methane. ○ Collected gas would be brought to the surface at the Tooheys Road Site for processing. ○ In the initial years of operation it is unlikely that sufficient quantities of gas would be produced to allow commercialisation of the resource. The collected gas would be flared during this time. ○ Future gas management and utilisation options would be evaluated in consultation with WSC and other stakeholders. One option could involve generating electricity on-site to power the desalination plant.
Site Rehabilitation and Vegetation Offsets	<ul style="list-style-type: none"> ○ Conceptual rehabilitation program outlines basic rehabilitation options and activities. ○ The primary objective of the rehabilitation program is to produce final stable landforms at each of the three Project infrastructure sites, consistent with surrounding topographic features and suitable for the proposed future land use: <ul style="list-style-type: none"> ○ The Tooheys Road Site would be rehabilitated to create a stable and non-polluting landform that is suitable for ongoing use as an industrial site. ○ The Buttonderry Site and Western Shaft Site would be rehabilitated to create a stable, non-polluting landform with self-sustaining vegetation to improve conservation values of the area. ○ Completion criteria for each stage of the rehabilitation program would be developed and refined through the Rehabilitation and Environmental Management Plan, which would be developed in consultation with key stakeholders after planning approval and a mining lease have been granted. ○ Rehabilitation activities to be undertaken in the mining area would be

	<p>limited to works required to repair any subsidence related damage.</p> <ul style="list-style-type: none"> o Ecological offset strategy proposed involves planting 50 ha of native vegetation on Proponent owned land to compensate for loss of approximately 22 ha of native vegetation as a result of the Project.
Economic Benefits	<ul style="list-style-type: none"> o \$600 million total potential expenditure in the Central Coast economy from the three years of the mine's construction o Ongoing direct expenditure and flow-on effects to the local economy in the order of \$200 million per annum. o Over \$1 billion in total revenue to Government over life of Project.
Community Contributions	<ul style="list-style-type: none"> o The Project would implement a Community Enhancement Program (CEP) funded by the Proponent comprising contributions in cash and in-kind. o Specific works and actions to benefit the local community directly would cover four main elements: <ul style="list-style-type: none"> o Community Trust Projects o Local Environment and Biodiversity Management o Work-Ready and Training Development o Community Infrastructure
Capital Value	\$1.4 billion (over life of Project)

1.3.4 Project Planning History

The Proponent has been exploring the Wyong Coal Development Areas under licence of the NSW Government since 1995. Exploration, mine planning, community consultation and environmental investigations have subsequently been ongoing for proposed Project development.

In November 2006, the Proponent lodged a Preliminary Assessment Report and Project Application with the Director-General of the Department of Planning (DoP). Accordingly, the DoP informed the Proponent of the Minister for Planning's confirmation that the Project is required to be assessed under Part 3A of the EP&A Act.

On 5 February 2007, prior to the issue of the Director-General's Environmental Assessment Requirements for the Project, the Minister for Planning announced an independent strategic inquiry into the *Impacts of Potential Underground Coal Mining in the Wyong Local Government Area* (referred to as the Wyong Inquiry). An Independent Expert Panel was appointed to conduct the inquiry which considered the issues related to potential coal mine developments in sensitive areas within the Wyong Local Government Area (LGA), including the Dooralong and Yarramalong Valleys.

Submissions were made to the Expert Panel from a host of potential stakeholders, including WSC and other Government agencies, interest groups and the coal mining industry. In addition, there were 66 individual submissions from the community and 237 form letters. The final report of the Inquiry was publicly released in December 2008.

An Independent Expert Panel was also appointed to conduct an independent *Strategic Inquiry into Underground Coal Mining in Southern Coalfield*. The final report of the Inquiry was publicly released in July 2008.

Following the two Inquiries, the Director-General issued the Environmental Assessment Requirements for the Project (DGRs) to the Proponent on 10 August 2009. The DGRs were prepared in accordance with the recommendations of the inquiries; issues raised in public submissions and specific environmental

assessment requirements of relevant Government agencies, including WSC's requirements submitted to the DoP in June 2006. The Environmental Assessment Requirements only considered the findings from the Southern Coalfield Inquiry that were relevant to mining in the Wyong LGA.

The Proponent then prepared an EA (herein referred to as the 2010 EIS) and submitted it to the Director-General, who determined that the EIS adequately addressed the Environmental Assessment Requirements and made the submittal publicly available. Earth Systems was initially engaged to conduct an independent review of the 2010 EIS. The WSC subsequently provided written submission to the Director-General concerning the Project in the form of Earth Systems' 2010 Review of the EIS.

On the 3rd of March 2011, the Project application was refused by the Minister for Planning under Section 75J of the *Environmental Planning and Assessment Act 1979*. The Project Refusal provided the following reasoning:

"The reasons for refusal of the project application are as follows:

- Uncertainty around the subsidence predictions for the project, particularly in the western portion of the site under Jilliby Conservation Area and the Wyong State Forest;*
- The project does not adequately address potential surface water quality impacts, resulting in uncertainty around the ability of the project to meet acceptable water quality outcomes;*
- Uncertainty around the ecological impacts of the project, particularly in the western portion of the site, as a result of a lack of ecological survey effort combined with uncertainty as to subsidence predictions in this area.*
- Uncertainty around the heritage impacts of the project, particularly in the western portion of the site, as a result of a lack of heritage survey effort combined with uncertainty as to subsidence predictions in this area.*
- In light of the above, the project is not considered consistent with the principles of ecologically sustainable development, including the precautionary principle, and as a consequence is not considered to be in the public interest."*

2 Review Method

This Report was undertaken to review and evaluate the 2013 EIS and technical appendices for the proposed Wallarah 2 Coal Mining Project to determine whether the 2013 EIS fulfilled applicable regulatory and legislative requirements and to ascertain whether the Proponent had adequately addressed the shortcomings of the 2010 EIS. To ensure a comprehensive review, Earth Systems undertook the following steps:

1. Review of the 2013 EIS Main Report and Technical Appendices;
2. Review of the Project Refusal Document from the NSW Minister for Planning;
3. Review of 2013 EIS for compliance with each of the Director General Requirements (10 August, 2009), new DGR's (12 January, 2012) and supplementary DGRs (11 July, 2012);
4. Review of the EIS against *Department of Sustainability, Environment, Water, Population and Communities* (SEWPaC) requirements with consideration of relevant Australian standards and guidelines; and
5. Attend briefing meeting by the Proponent and WSC in June 2013.

2.1.1 Literature Review

The following key documents were reviewed during the preparation of this Report:

- *Walarah 2 Coal Project Environmental Assessment: Volumes 1 to 6 (2013)* and technical appendices;
- *Walarah 2 Coal Project Environmental Assessment: Volumes 1 to 4 (2010)* and technical appendices;
- *Director-General's Environmental Assessment Requirements (January 2012) and Supplement to the Director-General's Requirements (July 2012)* ;
- All relevant Federal and State legislation, policies and plans;
- Relevant environmental, sustainability and environmental impact assessment (EIA) standards and best practice guidelines; and
- Wyong Shire Council Brief and Correspondence.

2.1.2 Statutory Compliance

An important objective of this review is to ensure that the EIS clearly demonstrates that the Project complies with all relevant Federal and State legislative requirements with respect to mining, planning and environmental impact assessment. The review considers whether the EIS adequately addresses the relevant provisions of State, Regional and Local policies and plans and new or updated regulatory requirements that may now apply subsequent to the original submission of the EIS in 2010.

The review has been undertaken to confirm that the EIS adequately addresses the Director-General's Environmental Assessment Requirements, supplementary DGRs and SEWPaC environmental assessment requirements.

2.1.3 Australian Standards and Guidelines

The review assesses the EIS in accordance with current Australian environmental, sustainability and EIS standards and best practice guidelines. The review considers the methodologies, procedures and

requirements provided in *Coal Mines and Associated Infrastructure: EIS Guidelines* by NSW Department of Urban Affairs and Planning (DUAP, 2000).

The review of the EIS also considers the principles set out in *Enduring Value - the Australian Minerals Industry Framework for Sustainable Development* by the Mineral Council of Australia (MCA, 2005). The framework aligns with global industry initiatives and provides critical guidance on the International Council on Mining and Metals (ICMM) *Sustainable Development Framework Principles* and their progressive application and implementation at the operational level. It also builds on the Australian *Minerals Industry Code for Environmental Management* - the platform for industry's continual improvement in managing environmental issues following its introduction in 1996. The purpose of the framework is to assist the mining companies to operate in a manner that addresses expectations of the community and which seeks to maximise the long-term benefits to society that can be achieved through the effective management of Australia's natural resources.

Additional legislation or guidelines have been developed by NSW since the initial EIS submission to the Director General in 2010. As such the 2013 EIS is subject to the following additional State requirements:

- Nature Conservation Trust Amendment Act 2010
- Protection of the Environment Operations Amendment (Environmental Monitoring) Act 2010
- National Parks and Wildlife Amendment (Aboriginal Places and Aboriginal Objects) (2010)
- Threatened Species Conservation Amendment (Biodiversity Certification) Act 2010
- National Parks and Wildlife Amendment Regulation 2010
- Threatened Species Conservation Amendment Regulation 2010
- Protection of the Environment Operations (General) Amendment (Pollution Incident Response Management Plans) Regulation 2012
- NSW Guideline for the use of Cost Benefit Analysis in Mining and Coal Seam Gas Proposals (2012)

2.1.4 International Standards and Guidelines

The review also determines if the EIS has been conducted in a manner consistent with International environmental, sustainability and EIA standards and best practice guidelines. The aim of this aspect of the review is to establish whether the Project meets International standards and guidelines.

The review of the EIS considers the principles, findings and recommendations outlined in the following guidelines, among others:

- *Principles of Environmental Impact Assessment Best Practice* by International Association for Impact Assessment (IAIA) (1999);
- *Environmental Impact Assessment Regulations and Strategic Environmental Assessment Requirements: Practices and Lessons Learned in East and Southeast Asia* by World Bank (2006); and
- *Sustainable Development Framework Principles* by ICMM (2003).

3 EIS Structure and Approach

3.1 Environmental Planning and Assessment Regulations

This section addresses the following Director General Environmental Assessment Requirement:

The Environmental Impact Statement (EIS) for the development must meet the form and content requirements in Clauses 6 and 7 of Schedule 2 of the Environmental Planning and Assessment Regulation 2000.

Clause 6 and 7 of Schedule 2 of the *Environmental Planning and Assessment Regulation 2000* are provided in Appendix A.

Key findings of the review, with respect to the above requirement, are summarised below:

- The form and content requirements of the EIS are in general met with respect to Clause 6, with the requirements of each sub-clause being specifically referred to in the EIS Main Report.
- The four principles of ecologically sustainable development have been addressed in Section 9.7 of the EIS Main Report (Clause 7, Sub-Clause 4).
- Clause 6, Sub-Clause 1 requires a full description of the “*likely impact on the environment*” and the “*measures proposed to mitigate any adverse effects of the development*”. For some aspects of the EIS this sub-clause has been met, however, the level of detail and extent to which impacts are assessed and mitigation measures are developed in the EIS is not considered sufficient in many instances, particularly with respect to development of management and mitigation measures. Specific examples of these deficiencies are detailed in this report.

3.2 Project Description

This section addresses the following Director General Environmental Assessment Requirement:

The EIS must include a detailed description of the development including:

- Need for the proposed development.
- Justification of the proposed mine plan, including efficiency of coal resource recovery, mine safety, and environmental protection.
- Likely staging of development, including construction, operational and rehabilitation stages.
- Likely interactions between the development and existing, approved and proposed mining operations in the vicinity of the site.
- Plans of any proposed building works.

Key findings of the review, with respect to the above requirement, are summarised below:

- A description of the Project is provided Section 3 and justification for the project in Section 9 of the EIS Main Report.
- The justification of the proposed mine and the efficiency of coal resource recovery are articulated in the Section 9 and the alternatives analysis of Section 3.
- Section 3 of the EIS provides a framework for the timing of construction, which is proposed for approximately three years for facilities and infrastructure, with underground construction occurring throughout the operational life of the mine. The construction and operations phases of the Project would occur for an estimated 28 years.

The framework for rehabilitation and closure is summarised in Section 7.25. A preliminary closure plan has not been developed. Section 7.25 provides principles and rehabilitation objectives. Some conceptual rehabilitation strategies are also provided in Appendices O, G, H and X. However, at this stage, there are few commitments provided. Many of the impact assessments do not specify measures undertaken for closure (e.g. surface water quality and groundwater quality and air quality, amongst others).

3.3 Environmental Planning Instruments

This section addresses the following Director General Environmental Assessment Requirement:

The EIS must include consideration of all relevant environmental planning instruments, including identification and justification of any inconsistencies with these instruments.

Environmental planning instruments include State Environmental Planning Policies (SEPPs) and Local Environmental Plans (LEPs) that regulate land use and development. For the purposes of this review, higher level federal and state regulatory requirements have also been considered.

Key findings of the review, with respect to the above requirement, are summarised below:

- In general, this aspect appears to be addressed reasonably well in the EIS Main Report Chapter 4.
- The following federal and state legislation relevant to the assessment and approval of mining projects have been referenced in the EIS:

Federal legislation

- *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act, administered by the Commonwealth Department of Sustainability, Environment, Water, Population and Communities)*
- *Native Title Act 1993 (administered through the Commonwealth Native Title Act 1993).*

NSW State legislation

- *Environmental Planning and Assessment Act 1979 (administered by the NSW Department of Planning & Infrastructure) – The EP&A Act is the principal piece of legislation regulating the assessment, approval and operation of mining projects. If approval is granted by the Minister, it is the primary approval instrument with which most other approvals must be consistent.*
- *Environmental Planning and Assessment Amendment Act 2008 No 36.*

- *Mining Act 1992 (administered by the Department of Trade & Investment) – Mining leases are granted by DTIRIS under the Mining Act.*
- *Protection of the Environment Operations Act 1997 (administered by the NSW Office of Environment & Heritage) – The main objectives of the POEO Act are to protect, restore and enhance the quality of the environment in NSW through pollution prevention and cleaner production, the reduction of harmful discharges and wastes, the reduction in the use of materials and improved re-use, recovery and recycling of materials.*
- *Threatened Species Conservation Act 1995 (Administered by the NSW Office of Environment & Heritage).*
- *National Parks and Wildlife Act 1974 (Administered by the NSW Office of Environment & Heritage).*
- *Heritage Act 1977 (Administered by the NSW Department of Planning & Infrastructure).*
- *Water Management Act 2000 and Water Act 1912 (Administered by the NSW Office of Water).*
- *Dams Safety Act 1978 (Administered by the Dams Safety Committee).*
- *Coal Mine Health and Safety Act 2002 (Administered by the Department of Trade & Investment).*
- *Pipelines Act 1967 (Administered by the Department of Trade & Investment).*
- *Native Vegetation Act 2003 (Administered by the NSW Office of Environment & Heritage).*

NSW State Environmental Planning Policies (SEPPs)

- *State Environmental Planning Policy No 33—Hazardous and Offensive Development (1992-129).*
- *State Environmental Planning Policy No 44—Koala Habitat Protection (1995-5).*
- *State Environmental Planning Policy No 55—Remediation of Land (1998-520).*
- *State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007 (2007-65).*
- *State Environmental Planning Policy (State and Regional Development) 2011 (2011-511).*

Local Environmental Plans (LEPs)

- *Wyong Local Environmental Plan 1991 (Wyong LEP 1991)*
- *Draft Wyong Local Environmental Plan (LEP) 2012*

Other Relevant Policies

- *The Draft Aquifer Interference Policy (2012) – Stage 1 has also been released. This policy sets out the proposed regulation of aquifer interference activities, including those associated with coal and CSG mining and exploration.*
- While the main state and federal legislation involved in the regulation of mining project assessments is referred to in the EIS (as listed above) the following key documents were not cited or considered in the EIS:

EPBC Act 1999 - Environmental Offsets Policy

- *On 3rd October 2012 the Government released the national EPBC Act Environmental Offsets Policy, and this applies to any new referrals and variations to approval conditions*

from 2nd October 2012. It also applies to any projects currently under assessment for which a proposed decision has not yet been made.

- This is an important consideration for the Watermark Project, given the substantial offset areas expected to be required and significant changes introduced in the new policy (see Section 7).

EPBC Act Amendment Bill 2013 - 'Water Trigger' Amendment

- On 13 March 2013 this Bill was introduced into the House of Representatives to amend the EPBC Act 1999 to include 'water resources' as a new matter of national environmental significance (NES) for large coal mining and coal seam gas projects.
- The Bill passed the House of Representatives on 21st March 2013 and was referred (as of 15th April 2013) to the Senate Environment and Communications Legislative Committee. On the 19th June 2013, the Bill passed the Senate, meaning that the Commonwealth is now responsible for ensuring water systems are not impacted by major coal seam gas and coal mining projects. The Bill is awaiting assent by the Governor-General. The changes will commence the day after assent.
- Although the Amendment post-dates the Wallarah 2 Coal Project EIS submission, it would apply to any developments (such as this Project) that are currently referred for a decision that is in the approval process, where the Independent Expert Scientific Committee has not yet given advice.

Further information regarding this amendment is detailed in Section 4.1.4 of the Report.

Mining Regulation 2010 (under the Mining Act 1992)

- The amendments to the Mining Act 1992 and new Mining Regulation 2010 improve environmental regulation of the mining industry by:
 - Expanding the Government's powers to regulate mining activities, to ensure sound environmental and rehabilitation outcomes.
 - Introducing audit powers to promote compliance.
 - Requiring a rehabilitation cost estimate and disclosure of an applicant's environmental performance record in certain applications for authorisations.
 - Enabling consistency of approach with other environmental regulators.

Nature Conservation Trust Act 2001

- Nature Conservation Trust Amendment Act 2010.

Protection of the Environment Operations Act 1997

- Protection of the Environment Operations Amendment (Environmental Monitoring) Act 2010 No 85.
- Protection of the Environment Operations (General) Amendment (Pollution Incident Response Management Plans) Regulation 2012.
- A number of key regulatory requirements under the Exploration License EL 7223 were documented in Section 2.5.1 (Exploration) but omitted from Section 4 (Regulatory Framework). This includes a number of special conditions that were added to EL 7223 in January 2012. Of particular note is the requirement in EL 7223 that "any development approval sought by the licence holder within the initial term of the licence or during any extensions or renewals of the licence shall not include any of the following activities in the area covered by the licence: ... open

cut mining anywhere on the floodplain". The current Project design would involve open cut mining (Eastern Mining Area) on the Mooki River floodplain, as reported in the Surface Water Impact Assessment. Hence, this key requirement of EL 7223 has not been met.

3.4 Risk Assessment

3.4.1 2010 Risk Assessment

The Proponent commenced a risk assessment process for the Project in 1996, with the latest assessment conducted in October 2009 incorporating the Director-General's Environmental Assessment Requirements. The Director-General's requirements require a comprehensive risk assessment of the potential environmental impacts of the Project to be undertaken which identifies the key issues for further assessment.

A fair and reasonable risk assessment process identifies and prioritises potentially significant environmental risks and impacts be addressed in the EIS. However, the Proponent's risk assessment appeared to be based on the results of the EIS and some important risks have been discounted in light of the findings of the EIS. The risk assessment fails to adequately consider some potential key failures and public risks commonly associated with longwall mining (e.g. water loss, water quality impacts, gas release and landslides).

The risks associated with the Project needed to be re-rated based on the knowledge gaps and uncertainties that remain and the findings of further assessments.

It was noted that the Proponent should continue the risk assessment process through the approvals phase, detailed design, construction, operation and ultimately closure of the mine.

3.4.2 2013 Risk Assessment

This section addresses the following Director General Environmental Assessment Requirement:

The EIS must include a risk assessment of the potential environmental impacts of the development, identifying the key issues for further assessment.

Key findings of the review, with respect to the above requirement, are summarised below:

- A Risk Assessment is summarised in Chapter 6 of the EIS Main Report, based on the assessment provided in Appendix of the EIS.
- The risk assessment provided in Appendix F is broadly consistent with Australian and International standards and guidelines on risk assessment and management, although several deficiencies in the risk assessment process have been identified.
- There was insufficient explanation of the method used to conduct the assessment, including the criteria used and assumptions made to assess each risk. This is a particular concern given the qualitative nature of the assessment.
- The risk assessment report has been condensed into a single page and is therefore inadequately covered (over-simplified) in the EIS Main Report, Section 6. For example, the risk summary tables in the EIS Main Report (Section 6) represent broad 'issues' but do not correlate with individual 'impacts' as assessed in Appendix F.

- The Preliminary Risk Assessment identified six 'high' risk issues (*Subsidence, Groundwater, Surface Water Management, Flooding, Ecology and Aboriginal Cultural Heritage*). All other preliminary risk issues were classified as "medium" or "low" risk.
- Following stakeholder engagement, a revision of the Preliminary Risk Assessment was undertaken to '*incorporate additional requirements*' (Chapter 6 – Risk Assessment) resulting in a Revised Risk Assessment. It is assumed from the Table in Appendix F that the Revised Risk Assessment also incorporates '*proposed management measures*'
- The '*proposed management measures*' in Table 1 in Appendix F to address specific impacts are not articulated clearly. In most cases the measures refer generally to recommendations made in the technical appendices (many of which were not committed to in the EIS Main Report) and/or to management plans that are yet to be developed.
- PDF errors in Table 1 of Appendix F render the table unclear; categories are undefined and are difficult to interpret.
- Key risks to community health and safety such as spontaneous combustion are not adequately addressed.

3.5 Commonwealth Government Requirements

This section addresses the following Director General Environmental Assessment Requirement as per the Supplementary Director General's Requirements of 11 July 2012:

The EIS must address the requirements of the Commonwealth Department of Sustainability, Environment, Water, Populations and Communities (SEWPaC).

For reference, SEWPaC requirements are provided in Appendix B of this document.

Key findings of the review, with respect to the above requirement, are summarised below:

- SEWPaC requirements are itemised in the Supplementary Director General's Requirements (June 2012) with clear references to the most relevant EIS sections addressing each item. In many cases, however, the item is not adequately covered in the referenced section, and in some cases the item does not appear to have been considered at all. Specific examples are provided throughout this review.
- General information (SEWPaC Requirement 1):
 - This aspect appears to be adequately addressed in Chapter 1 and 3 of the EIS Main Report.
- Description of the controlled action (SEWPaC Requirement 2):
 - This aspect has been addressed in the EIS Main Report Chapter 3, with only minor limitations of data regarding some aspects of the project (i.e. internal haulage routes).
- Description of the existing environment (SEWPaC Requirement 3):
 - Some aspects of the ecological survey methods were consistent with this SEWPaC requirement, however, areas adjacent to the Project boundary have not been surveyed. These and other concerns relating to SEWPaC Requirement 3 are discussed in Section 7.3 of this report.
- Description of the relevant impacts of the controlled action (SEWPaC Requirements 4-6):

- The relevant impacts are discussed briefly in the EIS (and in more detail in Appendices O) however a number of concerns relating to the impact assessment have been identified as discussed in Section 7.3 of this report.
- Proposed safeguards and mitigation measures (SEWPaC Requirement 7):
 - The proposed safeguards and mitigation measures are discussed briefly in the EIS (and in more detail in Appendix O) however a number of concerns relating to the costing of these mitigation measures have been identified as discussed in Section 7.3 of this report.
- Offsets (SEWPaC Requirement 8):
 - Offset requirements have been assessed in the EIS however the assessment has not been undertaken in accordance with SEWPaC's new Environmental Offsets Policy (2012). This and other concerns relating to SEWPaC Requirement 8 are discussed in Section 7.3 of this report.
- Other approvals and conditions (SEWPaC Requirement 9):
 - This aspect appears to be adequately addressed in Table 14 in Chapter 4 of the EIS Main Report.
- Economic and social matters (SEWPaC Requirement 10):
 - These aspects have been addressed in the EIS Main Report Sections 7.17, and supporting document (Appendices V). A review of these aspects is provided in Section 6 of this report.
- Environmental record of person proposing to take the action (SEWPaC Requirements 11-12):
 - In Section 1.4 of the EIS Main Report, it is stated that "WACJV has not been the subject of any proceedings under Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources".
 - Whilst not explicitly required by SEWPaC, a description of the environmental record of the Proponent in relation to their existing international mining operations would be more relevant for the purposes of this assessment.
- Information sources (SEWPaC Requirement 13):
 - Information sources generally appear to be adequately addressed throughout the EIS. However, there is very limited discussion of "uncertainties" in the environmental information provided throughout the EIS Main Report.
- Consultation (SEWPaC Requirement 14-15):
 - This aspect has been addressed in the EIS Main Report Chapter 5. A review of this aspect is provided in Chapter 5 of this report.

3.6 Plans and Documents

This section addresses the following Director General Environmental Assessment Requirement:

The EIS must include all relevant plans, architectural drawings, diagrams and relevant documentation required under Schedule 1 of the Environmental Planning and Assessment Regulation 2000. These documents should be included as part of the EIS rather than as separate documents.

Key findings of the review, with respect to the above requirement, are summarised below:

- Detailed engineering design drawings of project infrastructure / buildings are provided in Appendix E.
- A number of key Project design, baseline and impact assessment figures have been produced for the technical appendices but omitted from the EIS Main Report.

3.7 Potential Impacts Beyond Director General Requirements

The following potential impacts, beyond the Director General requirements, were identified but not considered or fully addressed in the EIS:

Buttonderry Waste Management Facility

The Buttonderry Waste Management Facility is an essential service infrastructure for the Wyong Council; servicing the waste management needs of the Wyong Shire community. The Buttonderry facility is considered a strategic regional facility for future processing and disposal of waste.

The primary concern is that should subsidence occur, leachate and landfill gas (methane) management systems could be compromised, with potential to lead to environmental and economic impacts. This has not been addressed as a potential impact within the EIS no management or mitigation measures have been developed to minimise the risk and mitigate potential impacts.

Disaster Risk Management

Disaster risk management for naturally occurring or human- induced events have been overlooked in the EIS. These include environmental emergencies such as uncontrolled discharge during high rainfall events, water storage dam wall failure, and bushfires. Other disasters could include those associated with spontaneous combustion or blasting accidents.

It is recommended that a comprehensive disaster risk management plan is developed, inclusive of detailed contingency plans to manage specific events, such as the development of contingency plan for management / treatment of the Mine Operations Dam (MOD) water that would be required should MOD water levels approach potential uncontrolled discharge stages to prevent untreated water from reaching Wallarah Creek.

3.8 Coal Alternatives and Markets

Chapter 9 of the EIS (Project Justification) provides a discussion on coal alternatives and makes a statement relating to the current lack of viability of alternative energy sources to replace coal according to international expert agencies such as the International Energy Agency. Section 9.2.1 states '*...an alternative source to replace carbon based fuel as the primary source of energy for base load electricity supply has not yet been and is considered not likely to be sufficiently developed in the near future (IEA, 2011)*'.

It is suggested that the mine will produce export quality coal with potential markets in Japan, China and India. It is stated that the Project seeks to assist Australia in meeting international and local demand for coal over the mine life.

3.9 Project Design Alternatives

The EIS provides three Project Design Alternatives, inclusive of the current proposed Project.

Option 1: Do Nothing

Option 2: Underground Operation (Bord and Pillar)

The bord and pillar underground mining method as suggested by Option 2 generally results in a lower level of surface subsidence above the mine extraction area. However, this alternative was deemed unviable due to safety implications and economic considerations (higher initial capital cost and higher operating costs). It is suggested that the use of this method would have resulted in the Project not being developed and the resource being sterilised.

Option 3: The Project

The option of conducting an underground longwall mining operation has been selected as the most appropriate after assessing a number of mine designs. It is suggested in the EIS that this method will maximise social and economic benefits while minimising environmental impacts associated with surface water, water supply, ecology, aboriginal archaeology and soils. *This option was also considered the best alternative in terms of meeting the principles of ESD and Objects of the EP& A Act.*

The design remains consistent with that of the 2010 EIS, excluding the following changes:

Mine Plan Layout

- The long wall panel widths within the extraction area have been increased from the original 2010 mine plan layout. Within the Hue Hue Mine Subsidence District (MSD) Area the originally proposed 120 m and 150 m wide long wall blocks have been increased to 125 m and 175 m respectively.
- In 2010 it was specified that within the Valley Area the long wall panels would be 150 m, 170 m or 200 m depending on depth of cover. In 2013 these lengths have been increased to a range of between 175 m to 205 m wide long walls depending on the cover.
- Within the Forest area the long wall panels have been stated as being less than 255 m which is an increased from the 250 m proposal in 2010.

Western Ventilation Shaft:

- The western ventilation shaft dimensions have been changed from 6 m in diameter and 490 m in depth to 5 m and 485 m respectively.

It is noted in Section 3.13.4 that a number of areas have been removed from the mine plan on environmental grounds, resulting in the sterilisation of an estimated 19.75 Mt of coal.

3.10 Project Schedule

As per Chapter 3 of the EIS, it is anticipated that construction will occur over a three year period. An indicative construction schedule is provided in Section 3.1.2, detailing a breakdown of quarterly

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3.10 Project Schedule

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construction activities for the first five years of the Project in the form of a Gantt chart. This includes the phases of Procurement and Mobilisation, Construction and Underground Development and Longwall Extraction.

3.11 Environmental Management System

The Proponent has not developed an Environmental Management System.

It is recommended that the project develops and implements an Environmental Management System based on ISO14001:2004 'Environmental management systems – Requirements with guidance for use' which is considered best practice.

3.12 Monitoring and Reporting

Monitoring and reporting processes are crucial to the success of adaptive management strategies required to be utilised. By producing regular reports, companies can gain a greater understanding of risks and opportunities, improve efficiency, benchmark environmental and social performance against laws, codes and best practices, as well as identify and mitigate environmental and social impacts.

The proponent has committed to developing Annual Reports (as per Chapter 8 of the Main EIS Report).

“WACJV will prepare an Annual Review Report (which summarises coal quantities, monitoring results and reviews performance against the predictions and commitments in this EIS) and distribute it to the relevant regulatory authorities and make available on the Project website.”

An Environmental Monitoring Plan should be produced as a guide to environmental parameter monitoring processes and scheduling. Findings from regular monitoring of air and water quality etc. should be provided to interested stakeholders on a regular basis to ensure that transparency.

3.13 Regular Independent Environmental Auditing

At present, the Proponent has not committed to the conduct of regular environmental and social audits. Regular independent environmental and social audits will provide the Proponent and other stakeholders with an objective view of the Project's performance, and provide recommendations for continuous improvement.

It is recommended that the Proponent commissions an independent expert to conduct Environmental Audits of the project on a regular basis throughout the project life cycle. This audit should:

1. Be conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Director-General;
2. Include consultation with the relevant agencies;
3. Assess the environmental performance of the project and whether it is complying with the requirements in this approval and any relevant EPL or Mining Lease (including any assessment, plan or program required under these approvals);
4. Review the adequacy of any approved strategies, plans or programs required under these approvals; and, if appropriate



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5. Recommend measures or actions to improve the environmental performance of the project, and/or any strategy, plan or program required under these approvals.
6. Be provided to key stakeholders such as Wyong Shire Council.

4 Water Quality

4.1 Context

Construction and operation of the Wallarah 2 Coal Project has the potential to impact surface and groundwater quality in the Project area affecting downstream or down-gradient waters and potentially sensitive receptors. The Wallarah 2 Coal Project Area is primarily located within one of the catchments feeding the water supply for the Gosford City Council and Wyong Shire Council. The Project area and downstream habitats are of moderately high biodiversity value, with a number of EPBC listed species and communities utilising water from the catchment.

Potential subsidence related impacts from Wallarah 2 Coal Project longwall mining are recognised as being a key factor for consideration for the Project, particularly with respect to their potential effects on residential structures, water catchments and groundwater regimes. However, it is important to note that subsidence and groundwater hydrology issues are not part of this review.

This review evaluates the Project 2013 EIS assessment of potential impacts to surface and groundwater quality and associated management and mitigation measures reported therein.

4.1.1 Reasons for Refusal 2010

The Minister for Planning refused the project application, in-part, because:

“The project does not adequately address potential surface water quality impacts, resulting in uncertainty around the ability of the project to meet acceptable water quality outcomes”

4.1.2 New Director General's Requirements

The Director General's Requirements (DGRs) for the Wallarah 2 Coal Project EIS, data January 12, 2012, included the following applicable language for water resources and applicable general requirements (supplementary requirements added to the original DGRs for the Project):

General Requirements Relevant to Water Quality

“The Environmental Impact Statement (EIS) for the development must meet the form and content requirements in Clauses 6 and 7 of Schedule 2 of the Environmental Planning and Assessment Regulation 2000.

In addition, the EIS must include a:

- *detailed assessment of the key issues specified below, and any other significant issues identified in this risk assessment, which includes:*
 - *a description of the existing environment, using sufficient baseline data;*
 - *an assessment of the potential impacts of all stages of the development, including any cumulative impacts, taking into consideration relevant guidelines, policies, plans and statutes; and*
 - *a description of the measures that would be implemented to avoid, minimise and if necessary, offset the potential impacts of the development, including proposals for adaptive management and/or contingency plans to manage any significant risks to the environment; and*

- consolidated summary of all the proposed environmental management and monitoring measures, highlighting commitments included in the EIS.”

Key Issues Relevant to Water Quality

The EIS must address the following specific issues:

Water Resources – including:

- detailed assessment of potential impacts on the quality and quantity of existing surface and ground water resources, including:
 - detailed modelling of potential groundwater impacts;
 - impacts on riparian, ecological, geo-morphological and hydrological values of watercourses, including environmental flows;
- a detailed site water balance, including a description of site water demands, water disposal methods (inclusive of volume and frequency of any water discharges), water supply infrastructure and water storage structures;
- identification of any licensing requirements or other approvals under the Water Act 1912 and / or Water Management Act 2000;
- demonstration that water for the construction and operation of the development can be obtained from an appropriately authorised and reliable supply in accordance with the operating rules of any relevant Water Sharing Plan (WSP) or water source embargo; - a description of the measures proposed to ensure the development can operate in accordance with the requirements of any relevant WSP; - a detailed description of the proposed water management system (including sewage), water monitoring program and other measures to mitigate surface and groundwater impacts”

4.1.3 Earth Systems Recommendations 2010

The Earth Systems’ review of the 2010 EIS concluded that the report did not contain an adequate assessment of the potential impacts of the Project on local and regional groundwater and surface water quality. Key issues identified in this review included:

Surface Water

The 2010 EIS failed to identify and describe sources of water pollution beyond salinity and does not assess potential water quality impacts from the construction, operation and closure of the Project. Sources of pollution could include increased turbidity and sedimentation due to erosion from construction, stockpiles, haul roads and other disturbed areas and workshops, vehicle wash facilities, plant and equipment and fuel storage.

Acid and Metalliferous Drainage (AMD)

The review of the 2010 EIS indicated that there had been no consideration of the potential impacts of AMD as a result of the construction and operation of the Project.

4.1.4 New Regulatory Requirements

- Water Management Amendment Act 2010
- Water Management (General) Regulation 2011
- Protection of the Environment Operations Amendment (Environmental Monitoring) Act 2010
- Protection of the Environment Operations (General) Amendment (Pollution Incident Response Management Plans) Regulation 2012

Of particular importance to the Project is the **EPBC Act Amendment Bill 2013 - 'Water Trigger' Amendment**, passed through the Senate on the 19th June 2013. The Bill is awaiting assent by the Governor-General. The changes will commence the day after the Bill is assented to.

The bill's passage now means the Commonwealth is responsible for ensuring water systems are not impacted by major coal seam gas and coal mining projects. Under the Bill, a person, a constitutional corporation or the Commonwealth (or agency) has committed an offence if they take an action involving coal seam gas development, or large coal mining development, and the action has, will have or is likely to have a significant impact on a water resource, unless they first obtain approval for the action for the Commonwealth environment minister under the EPBC Act.

The existing EPBC Act provides definitions of "coal seam gas development" and "large coal mining development" as any activity involving coal seam gas extraction or any coal mining activity (respectively) that has, or is likely to have, a significant impact on water resources. The definition of a water resource in this amendment is the same as currently used in the Water Act 2007. A water resource relates to ground water and surface water, and includes organisms and ecosystems that contribute to the physical state and environmental value of the water resource.

According to the Department of Sustainability, Environment, Water, Population and Communities guidelines on the definition of a "significant impact", a significant impact is an impact that is important, notable or of consequence, having regard to its context or intensity. A significant impact on water resources may be caused by one development action relating to coal seam gas or large coal mine, or the cumulative impact of such actions. Under the National Partnership Agreement, factors which may directly or indirectly bring about a significant impact on water resources could include those that:

- change in the quantity, quality or availability of surface or ground water;
- alter ground water pressure and/ or water table levels;
- alter the ecological character of a wetland;
- result in rivers or creeks diverted or impounded;
- alter drainage patterns;
- reduce biological diversity or change species composition;
- alter coastal processes, including sediment movement or accretion, or water circulation patterns;
- result in persistent organic chemicals, heavy metals, or other potentially harmful chemicals accumulating in the environment such that biodiversity, ecological integrity, human health or other community and economic use may be substantially adversely affected; or
- substantially increase demand for, or reduce the availability of water for the environment.

Although the Amendment post-dates the Wallarah 2 Coal Project EIS submission, it would apply to any developments (such as this Project) that are currently referred for a decision that is in the approval process, where the Independent Expert Scientific Committee has not yet given advice.

This means that the department will work closely with the proponent to identify what additional information is required to assess these impacts. The department will rely on information that has already been collected in the existing state and EPBC Act processes as much as possible, to ensure current assessments proceed efficiently.

The transitional arrangements provide that if the process of having a development assessed under the EPBC Act has already commenced, the Minister has 60 days (from the commencement of the Bill) to decide whether the project requires approval in relation to the new water trigger. The Minister then has to advise and consult with the individual proponents affected on the proposed decision for a period of 10 days before a final decision is made.

4.2 2013 EIS

Surface water quality sampling (initiated in 2006) for field water quality parameters and laboratory analysis continued through development of the 2013 EIS. Sampling has been undertaken monthly at thirteen (13) monitoring stations to determine baseline conditions for electrical conductivity (EC), pH, dissolved oxygen (DO), total suspended solids (TSS) and total dissolved solids (TDS) as well as a for number of total metal species and organic compounds, with results provided in Appendix J to the 2013 EIS.

Groundwater sampling for water quality appears to have been limited to measurement of TDS and pH.

- Concentrations of TDS ranged from 1,800 to 7,500 mg/L
- pH values ranged from 6.3 to 7.6.

Additional groundwater modelling was conducted for the 2013 EIS, with two models (W3 and W4) superseding previous models employed (W1 and W2). Models W3 and W4 incorporated some minor changes to the hydraulic conductivity distribution and the subsidence zone distributions.

A peer review of the groundwater modelling was undertaken by Kalf and Associates in accordance with the Murray Darling Basin Commission's "Australian Flow Modelling Guideline".

The water quality management plan operations phase management plan highlights four specific measures for managing surface water quality:

- (I) Diversion of water affected by the mine (stockpiled coal, disturbed areas, product of dewatering) into water holding facilities for re-use or treatment prior to discharge;
- (II) Implementation of appropriate erosion control measures at the discharge point (an energy dissipation device and channel bed protection);
- (III) Design of erosion and sediment control measures based on recommendations from the following guidelines: Managing Urban Stormwater, Soils and Construction, (Landcom, 2004) and Managing Urban Stormwater, Soils and Construction, Volume 2E Mines and Quarries (DECC, 2008).
- (IV) Implementation of a number of small sediment traps to treat runoff from the rail loop.

Mitigation measures for groundwater impacts include commitment to repairing damaged bores from subsidence and replacing sub-surface water supplies if groundwater drawdown exceeds expectations. Mitigation for groundwater quality is not directly articulated.

4.3 Key Issues

Surface Water

The 2013 EIS and Appendix J present a fairly thorough assessment of potential impacts to surface water quality during Project operations and identify a framework for managing water in the Project area. The strategy is based on the separation of runoff from undisturbed catchments from water potentially impacted by Project operations. The key objective of the mine water management system is to minimise the risk of untreated mine water being released to receiving waters. However, the impact assessment and the management measures to mitigate potential impacts are not articulated in a number of respects, including the following:

- The construction phase of the Project is not directly addressed in the 2013 EIS and Appendix J to the EIS. The Proponent does not provide an impact assessment, mitigation and management, or monitoring that specifically address potential water quality aspects during construction.

- Erosion of freshly disturbed land and sediment transport to watercourses is often the paramount water quality impact during construction. Management measures for preventing erosion and sediment during construction are not specified. Operations phase mitigation and monitoring is briefly summarised (refer to Mitigation and Management Planning, Section 12.2).
- The potential for generation of AMD as a result of oxidation waste rock and wallrock in the dewatered zone above the underground mining area was again not addressed. Geochemical data should be collected for the Project to identify the acid base accounting characteristics of the waste material and the rock in the unsaturated fractured wallrock zone.
- The surface water monitoring program does not yet include a sampling point immediately downstream of the proposed Wallarah Creek tributary discharge site (the controlled discharge point for the Project). The Surface Water Impact Assessment (Appendix J) mentions that a site will be set-up at the discharge location (monitoring station WTP), but does not provide a date for implementation. Potential impacts related to discharge will be difficult to interpret without an understanding of baseline at this location. Site W6 is downstream of the discharge point on Wallarah Creek, but exists below additional tributary input and does not provide a direct baseline.
- Turbidity data is not provided in the EIS or Appendix J. It is assumed that measurement for this parameter has not been included in the surface water monitoring program. It will be difficult to assess the level of sediment transport from construction and operations related erosion with measurement of TSS alone. WRM (Appendix J) indicate that erosion is significant in Jilliby Creek, "due to the highly dispersive nature of the bed/bank material" and that the flow of this channel may increase with subsidence of the channel.
- Runoff from the Buttonderry Site buildings, parking areas, paved and hardstand areas will be diverted to the Buttonderry Sediment Dam, which would then overflow to the Entrance Dam. The Entrance Dam overflow will discharge into Buttonderry Creek. Modelling indicates that overflow of the Buttonderry Sediment Dam will occur regularly (median of approximately 15 ML/a; 90th percentile discharge of approximately 40 ML/a; and 99th percentile uncontrolled discharge of approximately 67 ML/a). The EIS and Appendix J indicate that overflow will be "clean water". The model assumes that the sediment dam will sufficiently 'treat' the water passively by allowing sediment to settle out. The strategy does not take into account hydrocarbon input from parking facilities and sealed roads, nor that settling dams are often inefficient in containing suspended solids during high flow events.
- Wallarah Creek would be the receiver for storage overflows from the Mine Operations Dam (MOD), Portal Dam and Stockpile Dam, each of which will be comprised of untreated mine water. Sizing of the mine water storages has been based on achieving no uncontrolled discharge to the receiving environment. However, the EIS does not provide contingency for overflow in the event that it does occur.
- Specific management measures are generally not articulated. The 2013 EIS generally refers to management plans that will be subsequently generated to address potential impacts (e.g. Water Management Plan, Erosion and Sediment Plan, etc.).

Groundwater

The baseline assessment for groundwater quality appears to have included measurement of only pH and TDS. The 2013 EIS indicates that the WACJV will develop a Water Management Plan that will include sampling for the following groundwater quality elements:

- *"Quarterly monitoring of pH and EC in selected piezometers and pumped mine water. Such monitoring may provide early indication of the potential mixing of shallow groundwater within deeper strata groundwaters. Whilst this process is expected within the subsidence zone, it may not be evident"*

within the wider piezometer network at the leakage levels predicted by groundwater monitoring:

- *Six month measurement of TDS and speciation of water samples in selected piezometers to support identification of mixing of groundwater types. Speciation will include, as a minimum, major ions such as Ca, Mg, Na, K, CO₃, HCO₃, Cl, SO₄, and elements such as Al, As, B, Ba, F, Fe (total), Li, Mn, P, Se, Si, Sr, Zn, and*
- *Graphical plotting of basic water quality parameters and identification of trend lines and statistics including mean and standard deviation, calculated on a quarterly basis. Comparison of trends with rainfall and any other identifiable processes that may influence such trends.”*

The Proponent has not identified baseline water quality conditions for the parameters listed above that would provide the basis for comparison with results from construction and operations phase data collected.

Groundwater monitoring was also limited to the W2CP Honeysuckle Park and Buttenderry properties due to restricted access to other existing bores. The EIS specifies that WACJV will endeavour to re-instate monitoring at existing bore locations while the EIS is being reviewed.

Mitigation measures for groundwater impacts are limited to repairing damaged bores from subsidence and replacing water supply if groundwater drawdown exceeds expectations. Mitigation for groundwater quality is not directly articulated.

4.4 Conclusions and Recommendations

The water quality impact assessment for the W2CP 2013 EIS was not conducted according to conventional methodology (e.g. baseline assessment, impact assessment, management measures, residual impact, reporting). Each phase of construction and operations are not considered individually, with water quality impacts and associated management considered almost exclusively for operations. The 2013 EIS focuses on principal potential impacts: subsidence and hydrology (reviewed in a separate report), transference of saline groundwater to additional aquifers, and potentially sediment laden surface water during operations.

The management planning for avoiding or mitigating impacts to water quality is similarly focused on what are considered the most likely and important potential impacts. The 2013 EIS and applicable technical reports (Appendices I and J) provide a framework for water management during operations, whereby impacts to surface water will be avoided by diverting ‘clean’ surface water that is not affected by mine operations and containment of ‘mine’ water for reuse, treatment, or subsurface disposal. This analysis is fairly thorough and the water management infrastructure (dams, sediment traps and water conveyance) may prove effective in containing contaminated waters to within the confines of the Project’s area.

However, as specified above there are several gaps in the impact assessment for water quality and additional areas that are not comprehensively evaluated. The following measures are recommended to address these gaps:

- **Identify additional potential sources of contaminants and key water quality parameters** beyond potentially saline water abstracted during operations and potentially sediment laden that comes into contact with coal stockpiles (e.g. potential contaminants from equipment and fuel storage areas, workshops and vehicle wash down areas) and specify management plans for avoiding spillage and remediating contaminated areas.

- **Conduct geochemical assessment for potential AMD impact:** Acid base accounting characteristics of the waste rock should be undertaken to ensure adequate assessment of potential impacts of AMD and the identification of appropriate waste rock re-use and disposal strategies. This assessment should include material from the future wallrock in the dewatered zone.
- **Implement and immediately sample from monitoring station WTP** to provide a baseline for water quality conditions at the controlled discharge site.
- **Develop a construction phase erosion and sedimentation plan** that details erosion control measures and sediment control measures that are consider potential impacts from all potential sources during construction (e.g. specific areas of scheduled for vegetative clearance and major earthworks, stockpiles and haul roads. Specific best practices should be identified for each component of construction. Consideration should be given to the following:
 - Minimisation of vegetative clearance area, inclusion of vegetative buffer zones near surface water drainage and clearing vegetation during the dry season only;
 - Conducting major earthworks during the dry season;
 - Application of best practices to construction and maintenance of the unsealed road network (e.g. minimum road cross-fall to shed water; waterbars with discharge outlets and sediment control devices on steep slopes; and armouring of road surfaces);
 - Installation of sediment control measures downstream of construction works and disturbed land areas (e.g. silt fences, sediment basins, sediment traps, fibre rolls); and
 - Progressive revegetation of disturbed land areas, giving priority to high risk erosion areas such as steep slopes and sites close to rivers and creeks.
- **Include turbidity measurement** in all future surface water quality monitoring (pre-construction) to identify baseline conditions.
- **Regularly analyse Buttondery Sediment Dam and the Entrance Dam for hydrocarbons.** Develop a management plan avoiding input of hydrocarbons into the dam and for removal of hydrocarbons well in advance of the first uncontrolled discharge event;
- **Develop a proactive contingency plan for management / treatment of the Mine Operations Dam (MOD) water** that would be enacted should MOD water levels approach potential uncontrolled discharge stages to prevent untreated water from reaching Wallarah Creek.
- **Sample groundwater monitoring bores for applicable water quality parameters** (at the expanded network of existing bores, if possible) at least quarterly prior to construction to establish a baseline for groundwater quality;
- **Develop management plans** committed to in the EIS (e.g. Water Management Plan, Erosion and Sediment Plan, etc.) prior to the onset of construction.

5 Air Quality

5.1 Context

Mechanical disturbance of rock and soil materials from coal mining project construction and operations (e.g. bulldozing, blasting, and hauling on unsealed roads) and wind erosion of stockpiles and bare ground contribute the majority of particulate matter emitted from coal mining operations, the primary air pollutant emitted from coal mining and processing activities. Diesel powered equipment emit additional pollutants during construction and operations and methane flaring and equipment further emit potential pollutants into the atmosphere during coal mining operations.

The air emissions inventory for the Greater Metropolitan Region (GMR) of NSW (OEH, 2003) determined that the coal mining industry is the largest industrial emitter of Total Suspended Particles (TSP), particulate matter with an aerodynamic diameter of less than 10 microns (PM₁₀) and particulate matter with an aerodynamic diameter of less than 2.5 microns (PM_{2.5}) in the region. Other anthropogenic sources of particulate matter (e.g. farming, construction, travel on unpaved roads, etc.) and natural processes (e.g. high intensity wind, forest fires, etc.) contribute to the atmospheric load, therefore the cumulative input of coal mining, ambient conditions, and future development are of particular importance in assessing the potential impacts of Project implementation.

Impacts from particulate matter emission range from nuisance in surrounding communities from soiling or odour and reduced visual amenity to serious adverse health effects and mortality from high concentrations of particulate matter.

Particulate matter pollution is associated with underground and open-cut mining. The *NSW Coal Mining Benchmarking Study: International Best Proactive Measures to Prevent and/or Minimise Emissions of Particulate Matter from Coal Mining* (Donnelly et al, 2011) identifies the components of underground coal mining most commonly associated with particulate emission to the atmosphere.

“The main activities that produce emissions of particulate matter at underground mines are:

- *Transport of raw coal from the mine to the raw coal stockpile (run-of-mine (ROM) pad). Wind-blown particulate matter from conveyors or wheel generated particulate matter associated with haul trucks.*
- *Stockpiling materials on the ROM pad associated with dumping coal from conveyors or trucks. Wind-blown particulate matter from stockpiled coal and emissions associated with transferring coal to the load-in hopper (ROM hopper) of the processing plant.*
- *Emissions of particulate matter from the processing plant may occur from the dry processing operations such as crushing and screening. Emissions from wet processing operations tend to be minimal.*
- *Washed or processed coal is then transferred to product stockpiles and subsequently to trucks or trains for transport to the end user. Particulate matter emissions can occur due to wind erosion of product stockpiles if they become sufficiently dry and as a result of loading materials from the stockpile (reclaim). Dumping coal into*

rail wagons and trucks will also produce emissions of particulate matter.”

In addition to fugitive dust emissions (or incorporated within fugitive dust), Project activities will contribute oxides of nitrogen, carbon monoxide, sulfur dioxide, and organic compounds from combustion of diesel in mining equipment and from flaring of coal seam methane, emissions associated with combustion of diesel from the ventilation shaft at the Buttonderry site, and greenhouse gasses (such as fugitive methane and carbon dioxide).

5.1.1 Reasons for Refusal 2010

The Minister for Planning did not cite air quality as one of the justifications for refusing the 2010 Project application.

5.1.2 New Director Generals Requirements

The Director General's environmental assessment requirements (DGRs) for the preparation of an EIS for the proposed Wallarah 2 Coal Project, dated January 12, 2012, included the following applicable language for water resources and applicable general requirements, which are supplementary to initial DGRs provided for the 2010 EIS:

General Requirements Relevant to Air Quality

“The Environmental Impact Statement (EIS) for the development must meet the form and content requirements in Clauses 6 and 7 of Schedule 2 of the Environmental Planning and Assessment Regulation 2000.

In addition, the EIS must include a:

- *detailed assessment of the key issues specified below, and any other significant issues identified in this risk assessment, which includes:*
 - *a description of the existing environment, using sufficient baseline data;*
 - *an assessment of the potential impacts of all stages of the development, including any cumulative impacts, taking into consideration relevant guidelines, policies, plans and statutes; and*
 - *a description of the measures that would be implemented to avoid, minimise and if necessary, offset the potential impacts of the development, including proposals for adaptive management and/or contingency plans to manage any significant risks to the environment; and*
- *consolidated summary of all the proposed environmental management and monitoring measures, highlighting commitments included in the EIS.”*

Key Issues Relevant to Air Quality

“The EIS must address the following specific issues:

Air Quality – including a quantitative assessment of potential:

- *construction and operational impacts, with a particular focus on dust emissions including PM_{2.5} and PM₁₀ emissions and the dust generation from coal transport;*
- *reasonable and feasible mitigation measures to minimise dust emissions, including evidence that there are no such measures available other than those proposed; and*
- *monitoring and management measures, in particular real-time air quality monitoring”*

5.1.3 New Regulatory Requirements

Protection of the Environment Operations (Clean Air) Regulations 2010 (POEO (Clean Air) Regulation (POEO, 2010))

5.2 2013 EIS

PAE Holmes conducted an assessment for background concentrations of applicable air quality parameters, modelling for Project-related impacts to air quality during operations, and provided management measures that are consistent with the most up to date best practices for the industry in NSW (Appendix L to the 2013 EIS). The CALMET/CALPUFF modelling system was used to simulate the effects of meteorological conditions on pollutant transport, transformation and removal. PM₁₀, TSP and dust deposition have been directly measured and background NO₂ levels, collected as part of the Munmorah Rehabilitation EA, were used to estimate impacts for the W2CP. In the absence of PM_{2.5} data, an estimate was made using ratios of PM₁₀ / PM_{2.5} measured at the closest EPA monitoring sites.

Direct air quality measurement for the Project continued, with two high volume air samplers (HVAS) measuring PM₁₀ on a one day in six cycle, two HVAS measuring total suspended particles (TSP) on a one day in six cycle and six dust deposition gauges located near each of the Tooheys Road and Buttonderry Road Sites.

Local wind data was collected at the Tooheys Road site from 2007 – 2011. Local climatic data compilation also continued through 2011, provided by the Norah Head Automated Weather Station located approximately 10 km southeast of the Project.

For the impact assessment of air quality from Project operations (Appendix L), predicted ground level concentrations for 24-hour average and annual PM₁₀ concentrations, 24-hour average and annual PM_{2.5} concentrations, incremental annual average TSP concentration, incremental ground level dust deposition, incremental ground level odour concentration, ground level concentration of NO₂ from combustion of methane were modelled, with contour plots provided for each. Each considers the likely maximum daily or annual production scenarios from Project activities provided the implementation of best practice management measures listed in Table 7.7 of Appendix L.

5.3 Key Issues

The specialist study provides sound investigation of ambient baseline conditions for applicable parameters, analyses of potential Project-related emissions impacts according to maximum production scenarios, and provides management measures that consider up-to-date best practices for NSW.

However, it appears that the methodology for impact assessment (Section 8) was not undertaken in a manner consistent with applicable legislation (DECC, 2005) and therefore cannot be compared with the associated NSW impact assessment criteria for estimation of potential exceedences. The following gaps in the analyses appear to require attention:

- The modelling for predicted impacts (Sections 8.1 – 8.7) and associated contour plots consider emissions from Project-related operations alone (with exception of the abbreviated cumulative impact assessment discussed below). Predicted impacts from the Project must be summed with respective background concentrations to determine **total impact for each parameter and averaging period**. Instead, the impact assessment compares predicted emissions from Project operations alone against the impact criteria, giving the impression that concentrations of applicable parameters will be compliant with impact criteria, when this may not necessarily be the case.
- The cumulative impact assessment is provided in Section 8.8, which would be suitable for comparison with impact assessment criteria provided the assessment was conducted according to Sections 5 and 7 of the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (DECC, 2005) (refer to below). However, the cumulative impact assessment does not provide all the required information as detailed below:
 - Appendix L cumulative impacts (i.e. total impact) for annual concentrations sum average ambient conditions with predicted Project operational emissions (Table 8.2 of Appendix L). According to the approved methodology for this assessment (DECC, 2005), the maximum ambient (background) concentrations should be used. The outcome will likely effect whether predicted emissions exceed impact criteria.
 For example, for receptor P11, located at the closest residence to the north of the Tooheys Road Site, the predicted annual average PM₁₀ concentration of 1.6 µg/m³ was added to the average of the HVAC annual PM₁₀ concentrations from 1999-2012 (18 µg/m³) for a total concentration of 19.6 µg/m³ (below the 30 µg/m³ impact criteria). However, the addition of the maximum concentration predicted for the parameter, in this case reported to be 22 µg/m³ for P11, should have been added. The total impact would be quantified as 40 µg/m³ (18 background + 22 predicted), well above the 30 µg/m³ impact criteria.
 - For predicted daily maximum PM₁₀ concentrations, a statistical approach (Monte Carlo Simulation) was used to randomly select background daily PM₁₀ concentrations from those measured to be added to predicted operational emissions. While there may be merit in selecting this methodology, *The Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (DECC, 2005) specifies the use of maximum measured volumes in cases where measurements were not taken often enough to include them in the model (i.e. PM₁₀ concentrations were measured every sixth day). The results, provided in Figure 8.12 of Appendix L, are not very clear given the unit selection of the Y-axis. According to Figure 8.12, daily PM₁₀ concentrations would exceed impact criteria on approximately 20 – 25 days per year.
The Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (DECC, 2005) advises that for use of an approach other than those outline in Section 5 of that report, the Air Technical Advisory Services Unit of the DEC should be consulted.
 - A single value was provided for each parameter (average of the two HVAC values) for background concentration, regardless of the location of the receptor. Data recorded at the nearest HVAC would be more applicable. For receptor P11, HVAC-E data for PM₁₀ averaged 21 µg/m³. In averaging the Tooheys Road HVAC data (HVAC-E) with the Buttonderry HVAC data (HVAC-C), the concentration was reduced to 18 µg/m³.
 - The cumulative impact assessment (i.e. impact assessment) was conducted for only a subset of the parameters analysed (i.e. 24 hour PM₁₀ and annual PM₁₀, PM_{2.5}, TSP and dust deposition), with the assessment for cumulative NO₂ not assessed quantitatively. Cumulative impacts are not considered for 24-hour PM_{2.5}.

A cumulative impact assessment should capture total impacts (background concentration summed with predicted Project-related inputs) combined with anticipated future development. The cumulative impact assessment, as identified in Appendix L and the EIS, should be renamed the 'Impact Assessment', with a cumulative assessment undertaken that considers planned construction or industry in the region.

- According to Figure 5.2 of Appendix L, 24-hour PM₁₀ concentration (background conditions from HVAC-E) exceeded the 24-hour average goal criteria of 50 µg/m³ on more than 16% of the measurement days. This assumes of the 2,047 days between the 1 October 2006 and 30 April 2012, PM₁₀ was measured on 341 days (i.e. 1 day in 6 measuring cycle). Figure 5.2 identifies 55 days that exceeded 50 µg/m³ for 24-hour PM₁₀ (approximately 16%) at HVAC-E. In Section 5.2.1 of the specialist study, it is noted that the HVAE-E data is 90-93% complete, therefore more than 16% of the measurement days may have exceeded 50 µg/m³ for average 24-hour PM₁₀ as PM₁₀ was measured for less than 341 days.
- Data provided in Table 5.3 is considerably different for HVAC-E measured days above the 24-hour PM₁₀ goal criteria of 50 µg/m³ for 2006 – 2012 (12 days, or ~4% of measurement days). This discrepancy (as compared to Figure 5.2) is fairly significant and should be clarified.
- The dispersion model was not run for impacts during construction. The justification provided is that because construction related air quality impacts are estimated to be less than 35% of the emissions estimated to occur during operations, compliance with impact criteria during operations would necessarily translate to compliance during construction. Provided the uncertainty regarding compliance with impact criteria during operations, this assumption may not be justified. For example, given that ambient conditions for PM₁₀ exceed criteria on occasion, air quality impact criteria during construction and operations will both exceed 50 µg/m³ for an undetermined number of days per year.

Determination of Total Impacts

The Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (DECC, 2005) provides the criteria for application of impact assessment in Section 7.1.2 of the plan. The assessment criteria (e.g. 50 µg/m³ average PM₁₀ for 24 hours) "must be applied as follows:

1. *At the nearest existing or likely future off-site receptor*
2. *The incremental impact (predicted impacts due to the pollutant source alone) for each pollutant must be reported in units and averaging periods consistent with the impact assessment criteria.*
3. *Background concentration must be included using the procedures specified in Section 5.*
4. *Total impact (Incremental plus background) must be reported at the 100th percentile in concentration or deposition units consistent with the impact assessment criteria and compared with the relevant impact assessment criteria."*

Section 5.1.1 Accounting for background concentrations (referred to in item number 3, above) provides the following:

"For impact assessments of sulfur dioxide (SO₂), nitrogen dioxide (NO₂), ozone (O₃), PM₁₀, total suspended particulates (TSP), deposited dust, lead (Pb), carbon monoxide (CO) and hydrogen fluoride (HF), the existing background concentrations of the pollutant in the vicinity of the proposal should be included in the assessment as follows:

Level 1 Assessment

- Obtain ambient monitoring data that includes at least one year of continuous measurements.
- Determine the maximum background concentrations of the pollutant being assessed for each relevant averaging period.
- At the maximum exposed off-site receptor, add the maximum background concentration and the 100th percentile dispersion model prediction to obtain the total impact for each averaging period.

The Level 2 assessment criteria (DECC, 2005) do not apply as HVAC measurements need to have been conducted daily to add daily measured averages to the daily modelled averages.

Exceedences in the EPA's impact assessment criteria

Where impact assessment criteria will likely be exceeded (e.g. for PM₁₀), DECC (2005) specifies the following:

If the EPA's impact assessment criteria are exceeded, the dispersion modelling must be revised to include various pollution control strategies until compliance is achieved. To determine incremental increases in the cost of air pollution abatement, a sensitivity analysis can be carried out by varying:

- source release parameters
- separation distance
- efficiency of pollution control equipment
- level of management practice.

The results can be used to select the most cost-effective and environmentally effective control strategy.

For circumstances where background concentrations regularly exceed impact assessment criteria, the EPA should be consulted.

2013 EIS, Air Quality Impact Assessment

The 2013 EIS provides a summary of baseline conditions, impact assessment and mitigation and management measures provided in Appendix L. For some aspects, the EIS does not clearly convey the results of the impact assessment or the management measures provided in Appendix L. For example:

- In Section 7.5.3, the EIS summarises results of the cumulative assessment, indicating that the Project is unlikely to result in additional exceedences of relevant impact assessment criteria at the neighbouring receivers. As background concentrations of PM₁₀, for example, commonly exceed impact criteria and the Project is predicted to add as much as 27 µg/m³ at the nearest receptor, the accuracy of this determination requires consideration.
- The EIS provides a summary of recommended management and mitigation measures, but the list is slightly less comprehensive than that described in Appendix L.
- Predicted emission concentrations from dispersion modelling assume Project implementation of best practices listed in Table 7.7 of Appendix L. Therefore, these estimates are only relevant provided Project implementation of these controls.
- It is difficult to determine whether the EIS is committed to management and mitigation measures provided in Appendix L, or whether these are considered recommended best practices.

5.4 Conclusions and Recommendations

The assessment of ambient conditions (background concentrations) of applicable parameters, modelling for impacts during Project operations for these parameters, and recommendations for applicable best practices were thorough and conducted according to approved guidelines and current best practices. However, the impact assessment should be conducted according to the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (DECC, 2005), with predicted emissions added to maximum background concentrations measured at the applicable monitoring station. Contour plots and comparison to applicable impact criteria should address total impacts instead of emissions from Project operations alone. Modelling should be conducted for the construction phase of project implementation, with total impacts determined as above. Cumulative impacts should address potential near-term development in the Project area (if applicable).

As dispersion modelling for each parameter was conducted under the assumption of Project implementation of mitigation and management measures provided in Table 7.7 of Appendix L, the Proponent should clearly demonstrate commitment to these measures. The management and mitigation measures should be further developed in the Air Quality Management Plan for the Project. Some of the measures identified should be described in detail (e.g. specific speed limits, progressive rehabilitation plans for disturbed areas, etc.) according to *Coal Mining Benchmarking Study: International Best Proactive Measures to Prevent and/or Minimise Emissions of Particulate Matter from Coal Mining* (Donnelly et al, 2011).

SO₂ was not measured for this assessment. The inclusion of this parameter during construction and operations phase monitoring should be considered.

Further details regarding reactive management strategies for exceedences (particularly PM₁₀) and provision for investigations in response to complaints should also be provided in the Project's Air Quality Management Plan. A robust report reporting strategy will be needed, to enable reactive management to exceedences of impact criteria for applicable parameters measured for hourly or daily concentrations.

6 Greenhouse Gases

6.1 Context

6.1.1 Reasons for Refusal 2010

The Minister for Planning did not cite greenhouse gas emissions as one of the reasons for refusing the 2010 Project application.

6.1.2 New Director General's Requirements

The Director General's Requirements issued to the Proponent in 2012 require the EIS to include the following:

Greenhouse Gases – including:

- *A quantitative assessment of potential Scope 1, 2, and 3 greenhouse gas emissions;*
- *A qualitative assessment of the potential impacts of these emissions on the environment;*
and
- *An assessment of reasonable and feasible measures to minimise greenhouse gas emissions and ensure energy efficiency*

In addition, the Supplementary Director General's Requirements was also issued in July 2012 in accordance with section 78A (8A) of the *Environmental Planning and Assessment Act 1979*. In relation to greenhouse gases, the EIS must also include the following (summarised extract) as stated in the Supplementary Director General's Requirements (full reference can be found in Appendix B):

Proposed safeguards and mitigation measures

7. A description of feasible mitigation measures, changes to the action or procedures, which have been proposed by the proponent or suggested in public submissions and which are intended to prevent or minimise impacts. Information must include:

- a. *Description of the mitigation measures, these measures should be justified and based on best available practices;*
- b. *An assessment of the expected or predicted effectiveness of the mitigation measures;*
- c. *Any statutory or policy basis for the mitigation measures;*
- d. *The cost of the mitigation measures;*
- e. *An environmental management plan that sets out the framework for continuing management, mitigation and monitoring programs (including any relevant thresholds for corrective actions). Include the person or agency responsible for implementing these programs and any provision for independent environmental monitoring;*
- f. *The name of the agency responsible for endorsing or approving each mitigation measure or monitoring program;*
- g. *Identification of mitigation measures proposed to be undertaken by State or local governments or the proponent.*
- h. *Any changes to the action which prevent or minimise relevant impacts on listed threatened species or communities.*

6.1.3 New Regulatory Requirements

Carbon Pricing Mechanism (Carbon Tax)

The carbon pricing mechanism started on 1 July 2012. It applies to Australia's biggest polluters who have to report on, and pay a price for, their carbon pollution. This creates incentives to reduce emissions.

The price is fixed each year for the first three years, starting at \$23/tCO₂e in 2012 – 2013. The price will then be set by the market in 2015 – 2016.

Clean Energy Act 2011

The Clean Energy Act 2011 sets up the carbon pricing mechanism and contains rules for who is covered by the carbon pricing mechanism, what sources of carbon pollution are included, the surrender of emissions units, caps on the amount of carbon pollution from 1 July 2015, international linking, monitoring, enforcement, and appeal and review provisions.

6.2 2013 EIS

6.2.1 Quantification of Greenhouse Gas Emissions

Greenhouse gas emissions calculations have been updated to include more thorough analysis on each of the activity producing Scope 1, 2, and 3 emissions compared to the 2010 EIS (Scope 1: direct emissions, Scope 2: indirect emissions with respect to purchased electricity, and Scope 3: general indirect emissions).

In relation to estimating fugitive methane emissions (Scope 1), a site specific emission factor has been determined based on a gas content testing by Geogas in 2011. Separate calculations have been made to distinguish between the emissions of the methane gas due to flaring and the emissions of the methane gas due to venting (via Mine Ventilation Air).

The end-of-use coal emissions (emissions from the combustion of product coal) has been also been updated to include the total mass of the coal and multiplied by the emission factor from NGA Factors.

6.2.2 Impact of Greenhouse Gas Emissions

The EIS estimates the Project's greenhouse gas emissions impact by drawing comparison between the Project's Scope 1 emissions and estimates for the total global (2005 data) and national anthropogenic total emissions (2009 data). The Project's Scope 1 emissions would represent 0.04% of Australia's allowance under the first Kyoto Protocol commitment and a very small portion of global emissions.

An attempt to quantify the temperature increase associated with various global warming scenarios has also been carried out for towns/cities closest to the Project. This has been derived from studies conducted by CSIRO (2007). It is noted that the Project's contribution to projected climate change, and the associated impacts, would be in proportion with its contribution to global GHG emissions.

The 2013 EIS has also included an analysis on the impact carbon tax has on the Project. A benefit cost analysis and sensitivity analysis has been conducted and are shown in Appendix W: Economic Impact Assessment.

6.2.3 Greenhouse Gas Mitigation and Management

Due to the proposed flaring activities during operations of the Project, it is claimed in the EIS that when compared with 100% fugitive emissions of methane venting only, the flaring scenario results in GHG saving of approximately 54% of Scope 1 emissions over the Project life.

6.3 Key Issues

Quantification of Greenhouse Gas Emissions

- Assumptions and methodology (with references) need to be more clearly stated in estimating the greenhouse gas emissions. Due to uncertainties in the methodology used, it cannot be determined whether the figures presented are accurate. Earth Systems' internal calculations did not produce the same results as stated in the report. It is possible that the 2013 EIS has underestimated the emissions from fugitive methane flaring and venting;
- The use of NSW stationary power plant emission factors to represent end-use of coal in another part of the world requires justification; and
- Emissions from the shipping of the product coal have been excluded due to the difficulties in emission estimates. To understand the potential magnitude of such emissions, a conservative scenario should have been assumed and modelled. Emission factors for shipping of bulk commodities are available (e.g. from IPCC reports) and could be applied. It is likely that this Scope 3 emission source will be significant.

Impact of Greenhouse Gas Emissions

- The impact assessment is largely based on the Project's Scope 1 direct emissions only. When considering the impact in national and global context, all three scopes of emissions should be included to reflect the overall impact (direct and indirect) of the Project's construction, operation, and closure activities. Limited attention has been given to the most significant GHG emission activity – the 'energy production' emissions (emissions from the use and combustion of the product coal) – although it is the largest source of total Project emissions (representing ~98% of total Project emissions);
- The Project's total emissions impact in the national and global context has not considered recent scientific literature regarding greenhouse gas emissions and impacts, such as:
 - The Global Carbon Budget of 750 GtCO₂e should be used as a basis for assessing the Project's total emissions (including Scope 1, 2 and 3) contribution. The Project would represent 0.05% of total international greenhouse gas emissions under the Global Carbon Budget approach.
 - No consideration has been given to the implications of recent International Energy Agency (IEA) analysis regarding remaining Global Carbon Budget and what proportion of existing known fossil fuel reserves must not be combusted. The IEA in the World Energy Outlook report (2012) indicated that to "no more than one-third of proven reserves of fossil fuels can be consumed prior to 2050 if the world is to achieve the 2 °C goal".
 - There is no mention of the internationally agreed threshold of limiting anthropogenic global warming to 2 degrees above pre-industrial levels, nor is there analysis conducted on long term impacts at 2100, which is a standard scientific reporting timeframe. Discussion of global warming impacts at projected temperature increases of 4 to 6 degrees in 2100 would have been more appropriate.

- The local impact of the Project's emissions will be better perceived by the public if the emissions associated with operations are compared to the WSC region's baseline emissions.

Greenhouse Gas Mitigation and Management

- The limited list of possible greenhouse gas emission reduction strategies stated in 2013 EIS does not meet the 2013 Director-General's Environmental Assessment Requirements and the Supplementary Director General's Requirements. There are many more significant greenhouse gas emission reduction measures that could be undertaken than those mentioned. A comprehensive review of international best practice mining energy efficiency should be conducted by the Proponent, with particular emphasis on reductions to the major extraction emissions; and
- As part of managing carbon tax liability, it may be worth considering carbon offset mechanisms (e.g. actual purchase of carbon credits for offsetting purposes or co-investment in local renewable energy projects). The latter would represent a long term tangible emission reduction measure, for example through funding a local renewable energy plant to offset a certain percentage of the Project's annual emissions.

6.4 Conclusions and Recommendations

Calculations carried out in estimating greenhouse gas emissions are generally well conducted and are in accordance with the National Greenhouse and Energy Reporting (Measurement) Determination (DCCEE, 2008) and the National Greenhouse Accounts Factors July 2012 (DCCEE, 2012) methodology. The calculations have included the majority of emission activities and Scopes 1, 2, and 3.

However, the greenhouse gas emission mitigation strategies are very brief, do not demonstrate a sufficient level of commitment by the Proponent to reduce emissions, and do not adequately address the terms listed in the Director-General's Environmental Assessment Requirements and the Supplementary Director-General's Requirements (as mentioned in Section 6.1.2).

In order to fully address these requirements and to achieve emissions reduction during construction and operation, the following key actions are considered necessary:

- Develop more detailed approaches for implementing the proposed greenhouse gas reduction measures. For example, conduct feasibility assessments of each proposed measure including establishment of best practice, document planning and management of measures to be implemented, list goals to be achieved and develop a monitoring framework, as well as conducting financial assessments).
- Provide a more realistic assessment of greenhouse gas (GHG) impacts by including Scope 2 and 3 emissions sources in the analysis of the GHG impacts and updating impacts of the Project on anthropogenic global warming, such as using a Global Carbon Budget approach as defined in the scientific literature.

7 Ecology

7.1 Context

7.1.1 Reasons for Refusal 2010

The Minister for Planning cited the following reasons for the refusal of the 2010 Project application in relation to ecological issues:

- *Uncertainty around the ecological impacts of the project, particularly in the western portion of the site, as a result of a lack of ecological survey effort combined with uncertainty as to subsidence predictions in this area;*
- *Uncertainty around the subsidence predictions for the project, particularly in the western portion of the site under Jiliby Conservation Area and the Wyong State Forest.*

7.1.2 New Director General's Requirements

In relation to ecological issues, the 2012 DGRs state that the EIS must address the following:

Biodiversity

- *Measures taken to avoid, reduce or mitigate impacts on biodiversity;*
- *Accurate estimates of proposed vegetation clearing;*
- *A detailed assessment of potential impacts of the development on any:*
 - *Terrestrial or aquatic threatened species or populations and their habitats, endangered ecological communities and groundwater dependent ecosystems (including the following threatened species: Angophora inopina, Cryptostylis hunteriana, the Giant Barred Frog (Mixophyes iterates), the Stuttering Frog (Mixophyes balbus), the Littlejohns Tree Frog (Litoria littlejohni);*
 - *Migratory bird species listed under CAMBA, JAMBA and/or ROKAMBA; and*
 - *Regionally significant remnant vegetation, or vegetation corridors;*
- *Impacts on Jiliby State Conservation Area, including impacts on the conservation and recreational values of the reserve and landowner consent issues; and*
- *A comprehensive offset strategy to ensure the development maintains or improves the terrestrial and aquatic biodiversity values of the region in the medium to long term.*

The Supplementary DGRs aim to ensure that sufficient information is provided to assess the potential impacts to State biodiversity and Commonwealth Matters of National Environmental Significance (MNES). A summary of the Supplementary DGRs in relation to ecological issues is provided below (refer Appendix B for the full document):

Description of the existing environment

3. A description of the existing environment of the proposed location and the surrounding areas that may be affected by the action, including but not limited to:

- a. Surveys using accepted methodology for targeting EPBC listed threatened species and their respective habitat, including but not limited to OEH's (2009) and DSEWPac (2013) guidelines;
- b. A description of the distribution and abundance of threatened species, as well as suitable habitat (e.g. breeding, foraging) within the site and in surrounding areas that may be impacted by the proposal. Specifically, this must include but not be limited to the Charmhaven Apple (*Angophora inopina*), Black-eyed Susan (*Tetraheca juncea*), Spotted-tail Quoll (*Dasyurus maculatus maculatus*) and Giant Barred Frog (*Mixophyes iterates*);
- c. The regional distribution and abundance of suitable and potential habitat for EPBC listed threatened species surrounding the site.

Description of the relevant impacts of the controlled action

4. An assessment of all relevant impacts with reference to the EPBC Act Policy Statement 1.1 Significant Impact Guidelines Matters of National Environmental Significance (2009) that the controlled action has, will have or is likely to have on relevant threatened species and/or ecological communities. This includes impacts such as vegetation removal, ground subsidence and alteration of hydrological processes on species including but not limited to Charmhaven Apple, Black-eyed Susan, Spotted-tail Quoll and Giant Barred Frog. Information must include:

- a. A description of the relevant impacts of the action on MNES;
- b. Detailed assessment of the nature and extent of the likely short term and long term relevant impacts;
- c. A statement whether any relevant impacts are likely to be unknown, unpredictable or irreversible;
- d. Analysis of the significance of the relevant impacts;
- e. Any technical data and other information used or needed to make a detailed assessment of relevant impacts.

5 & 6. A description of the relevant impacts on the Charmhaven Apple and the Giant Barred Frog should include an analysis of the current distribution and/or potential habitat on the site. It should also include direct, indirect, cumulative and facilitative impacts on the:

- a. Extent of the population, including connectivity to populations on the site and in the surrounding area;
- b. Quality or integrity of the populations;
- c. Abiotic factors necessary for the survival of the species, particularly impacts associated with ground subsidence and alteration to ground and surface hydrology.
- d. These impacts should be described for both the construction and operational phases of the controlled action.

Proposed safeguards and mitigation measures

7. A description of feasible mitigation measures, changes to the action or procedures, which have been proposed by the proponent or suggested in public submissions and which are intended to prevent or minimise impacts. Information must include:

- a. Description of the mitigation measures, these measures should be justified and based on best available practices;

- b. An assessment of the expected or predicted effectiveness of the mitigation measures;*
- c. Any statutory or policy basis for the mitigation measures;*
- d. The cost of the mitigation measures;*
- e. An environmental management plan that sets out the framework for continuing management, mitigation and monitoring programs (including any relevant thresholds for corrective actions). Include the person or agency responsible for implementing these programs and any provision for independent environmental monitoring;*
- f. The name of the agency responsible for endorsing or approving each mitigation measure or monitoring program;*
- g. Identification of mitigation measures proposed to be undertaken by State or local governments or the proponent.*
- h. Any changes to the action which prevent or minimise relevant impacts on listed threatened species or communities.*

Offsets

- 8. Any residual impacts should be offset to ensure protection of MNES. Reference should be made to the department's draft policy statement, including any revisions to this statement, and:**
- a. Description of any offset package including how the offset compensates for the residual impacts, when the offset will be delivered and how the offset will be managed;*
 - b. An assessment of the impact of the offsets on other matters of environmental, economic or social significance; and*
 - c. Analysis of cost, both financial and other, related to offsets.*

7.1.3 Earth Systems Recommendations 2010

In relation to ecological issues, Earth Systems' 2010 EIS Review recommended:

- Further ecological surveys and assessment, including comprehensive Commonwealth threatened species and aquatic fauna surveys.

Key issues identified with the 2010 EIS included:

- The ecological assessment had been undertaken without the establishment of an adequate baseline.
- Only limited field surveys were conducted for the proposed mining area, which is particularly significant given the potential presence of Commonwealth threatened species in the area. Detailed field information on these species was not able to be provided in the EA.
- No current field baseline had been established for aquatic fauna.

7.1.4 New Regulatory Requirements

Environment Protection and Biodiversity Conservation (EPBC) Environmental Offsets Policy 2012

The new policy outlines the Australian Government's commitment to the use of environmental offsets and replaces the draft policy statement *Use of environmental offsets under the EPBC Act (2007)*. The policy and associated offset calculation guidelines provide much more transparency about the suitability of offsets. The decision to approve a proposed action considers the suitability of proposed offsets. This new policy applies to "any new referrals and variations to approval conditions from 2 October 2012. It also applies to any projects currently under assessment for which a proposed decision has not yet been made" (DSEWPC 2012).

Forestry Act 2012

The new act repeals the *Forestry Act 1916* and the *Timber Marketing Act 1977* to provide for the dedicated management and use of state forests and crown timber land for forestry and other purposes. Additionally, the Act serves to constitute the Forestry Corporation of New South Wales as a statutory state owned corporation. The western portion of the proposed mining Project is within the Wyong State Forest.

7.2 2013 ES

Catchments and State Forests in the vicinity of the Project are discussed in Chapter 2 of the main EIS Report by Hansen Bailey. Potential ecological impacts and proposed management/mitigation measures are discussed in Chapter 7 (Sections 7.9 and 7.10).

These sections are based on the specialist studies provided as appendices to the EIS as follows:

- Appendix O: Cumberland Ecology (2013) Wallarah 2 Coal Project Ecological Impact Assessment.
- Appendix P: Marine Pollution Research Pty Ltd (2013) Wallarah 2 Coal Aquatic Ecology Impact Assessment

Additional work conducted for the 2013 EIS in relation to terrestrial and aquatic biodiversity is summarised below.

7.2.1 Terrestrial Biodiversity

Additional terrestrial vegetation mapping, flora and fauna surveys were conducted within the eastern and western portions of the proposed mining Project area since the 2010 EIS submission (

Table 7.1). Vegetation mapping was conducted and vegetation condition assessed throughout the entire Project Boundary (except for in areas with logistic constraints, e.g. difficult terrain). Based on these field surveys and satellite imagery, an overall assessment of the vegetation within the Project Boundary was conducted.

Quadrats and transects within the eastern portion of the Project Boundary and two quadrats around the Western Ventilation Shaft were assessed for all vascular plants and targeted for threatened species and orchids. Fauna habitat surveys, particularly focused on the presence of tree hollows, was predominantly conducted in the eastern portion of the Project Boundary. All vertebrate species (except fish) were surveyed for throughout the entire site, using a variety of methods. These surveys were much more comprehensive (both spatially and taxonomically) than previous work conducted for the 2010 EIS.

Table 7.1 A summary of additional field biodiversity surveys conducted for the Wyong 2 Coal Project EIS

Year/s	Assessment conducted	Area/s assessed
2009-2012	<ul style="list-style-type: none"> • Vegetation mapping • Vegetation condition 	<ul style="list-style-type: none"> • Buttonderry • Tooheys Rd • Hue Hue Rd Offset • Western Project (Extraction) Area (mostly along public roads) • Western Ventilation Shaft • Honeysuckle Park
2009-2012	<ul style="list-style-type: none"> • Flora surveys (quadrats) 	<ul style="list-style-type: none"> • Buttonderry

	<ul style="list-style-type: none"> Targeted threatened flora species surveys Orchid surveys 	<ul style="list-style-type: none"> Tooheys Rd Hue Hue Rd Offset Western Ventilation Shaft
2012	<ul style="list-style-type: none"> Targeted <i>Angophora inopina</i> and <i>Melaleuca biconvexa</i> searches 	<ul style="list-style-type: none"> Buttonderry Tooheys Rd
2009-2012	<ul style="list-style-type: none"> Fauna habitat assessment Tree hollow assessments 	<ul style="list-style-type: none"> Buttonderry Tooheys Rd Hue Hue Rd Offset
2009-2012	<i>Fauna surveys</i> <ul style="list-style-type: none"> Ground and arboreal mammals Micro-bats Nocturnal mammals, birds and amphibians Diurnal birds Reptiles and amphibians 	<ul style="list-style-type: none"> Western Project (Extraction) Area Tooheys Rd Hue Hue Rd Offset Buttonderry

7.2.2 Aquatic Biodiversity

A new Aquatic Ecology Impact Assessment was commissioned for this EIS (Appendix P). The study involved a broad, catchment-wide literature and database review of the current aquatic ecology of the region and included an assessment of potential impacts from the Project on local and downstream ecology and aquifers (Table 7.2). The study also surveyed local rivers and tributaries for flora, fauna, ecological communities, water quality and stream health over three seasons. In addition, boreholes were assessed for the presence of stygofauna in aquifers near to the proposed mining operations in the western portion of the Project Boundary.

Table 7.2 Summary of the baseline aquatic ecology study undertaken for the Wyong 2 Coal Project EIS

Year/s	Assessment method	Area/s assessed
2011	<ul style="list-style-type: none"> Literature review 	<ul style="list-style-type: none"> Walarah Creek sub-catchment Wyong River sub-catchment
Autumn/Spring 2011 Autumn 2012	<ul style="list-style-type: none"> Macroinvertebrates AusRivAS sampling Fish and other vertebrates Stream condition Aquatic plants Water quality Aquatic groundwater dependent ecosystems 	<ul style="list-style-type: none"> Wyong River Jiliby Jiliby Creek Little Jiliby Jiliby Creek Spring Creek Walarah Creek Buttonderry Creek Hue Hue Creek
2010	<ul style="list-style-type: none"> Stygofauna (13 bores) 	<ul style="list-style-type: none"> Jiliby Jiliby Creek Little Jiliby Jiliby Creek Honeysuckle Park

7.3 Key Issues

Description of the existing environment

The additional aquatic surveys conducted have allowed the aquatic baseline of the Project to be described based on field surveys, which was not conducted in the previous EIS. The additional terrestrial ecology surveys conducted have also increased the robustness of the ecological baseline, although there are still some aspects not well covered as described below.

- The Study Area (defined as the Project Boundary) did not include a continuous buffer around the Project infrastructure and extraction zone. In some parts, the Infrastructure Boundary and Project Boundary shared the same “boundary line” or were very close to each other (e.g. along the Motorway Link Road). This is not consistent with the OEH’s *Survey and Assessment guidelines* (2009) which require fauna surveys to be conducted in a continuous buffer zone around the Project Boundary to allow for the consideration of potential impacts on highly mobile fauna, as well as indirect impacts on flora and fauna in the surrounding area.
- Confirmation of the results of the database searches of fauna occurring in the wider region was not adequately conducted. A search for existing records was conducted in a 10 km radius of the centre of the Project, but no confirmation of these results was conducted. An (on site) overview assessment of the surrounding region could have provided much more information about the species potentially (indirectly) impacted by the Project. This could have simply involved incidental records and vehicular inspection along roads.
- Detailed flora quadrat surveys (including surveys for threatened species) were not conducted throughout the Subsidence Impact Limit area. It was noted that incidental observations were taken when conducting other surveys, but no justification was provided as to why quadrats were not completed in other areas (especially in the Jilliby State Conservation Area and Wyong State Forest).

One of the 2012 DGRs is for the EIS to provide (3b) “a description of the distribution and abundance of threatened species”. A statement of abundance and distribution of threatened species has been included for surveyed sites in the eastern portion of the Project Boundary. However, no detailed threatened species population distribution and abundance estimates of the Project Boundary (as a whole) and surrounding area were provided based on available information.

Description of the relevant impacts of the controlled action

Descriptions of the relevant impacts of the Project are discussed briefly within the main text of the 2013 EIS and further detail is provided within two appendices (Appendices O and P). Main findings of the review regarding ecological impacts are as follows:

- The 2012 DGRs specifically require impacts on Jilliby State Conservation Area to be considered in relation to biodiversity. The potential impacts on this area are not specifically discussed in the main text of the EIS, although there is some discussion of likely impacts of subsidence in the conservation area within the relevant Appendices.
- The assessment of the likely extent of indirect impacts on fauna in the main text of the 2013 EIS is too general. For example, Section 7.9.3 indicates that indirect impacts may include “Lighting spillage effects as a result of infrastructure areas” but does not include an assessment of the potential magnitude or duration of this impact. The assessment of indirect impacts of issues such as lighting are also very general in the relevant Appendices and conclusions are largely unjustified. For example, Appendix O states that “light pollution is unlikely to have a significant long term impact on any fauna species” (Section 6.3.2). This statement implies that all fauna species are unlikely to be impacted in the long-term; however some disturbance-intolerant species may flee and not return. Some nocturnal species may also be attracted by an increase in

insect activity around the lights. These impacts may continue for the life of the Project and possibly beyond, and should be appropriately considered in the EIS.

- One of the Supplementary DGRs (4c) states that the EIS is required to include “a *statement whether any relevant impacts are likely to be unknown, unpredictable or irreversible*”. Many of the potential ecological impacts listed in the 2013 EIS can be unpredictable and/or irreversible, yet these issues are not discussed in detail in either the main text of the EIS or the relevant appendices (O and P).
- There is limited evidence provided for the conclusion that the impact on species/communities resulting from subsidence “*are expected to be minor and temporary*” (section 6.2.5 of Appendix O) and the level of uncertainty of this conclusion has not been identified. Ecological systems are inherently complex and potential impacts are often unpredictable. Some impacts on ecological values from subsidence may be unpredictable, and it is possible that some impacts could be severe and long-lasting. Given that the NSW Scientific Committee have listed “Alteration of habitat following subsidence due to longwall mining” as a Key Threatening Process, a detailed assessment of these potential impacts and uncertainties should have been included in the 2013 EIS.
- Very limited detail was provided in the EIS main text regarding potential ecological impacts during the different phases of the mine (i.e. construction, operation, closure). There are expected to be markedly different potential impacts on flora and fauna in these three phases. Potential impacts associated with each phase should be clearly identified. The 2012 Supplementary DGRs state that “*impacts should be described for both the construction and operational phases of the controlled action*” for the Charmhaven Apple and Giant Barred Frog (Art. 5 & 6).

Proposed safeguards and mitigation measures

Key findings regarding the proposed safeguards and mitigation measures are:

- A costing of mitigation measures is required by the Supplementary DGRs (Art 7d) but this has not been provided in detail. Brief costing information is found within Appendix O however is not provided within the main EIS text.
- A detailed *environmental management plan* has not been included, which is required by the Supplementary DGRs (Art 7e). However, details regarding the contents of the management plan have been discussed.
- Details of rehabilitation/revegetation procedures to be implemented have not been provided (relevant procedures briefly discussed in Appendix O).

Biodiversity Offset Strategy

Key findings regarding the proposed offset strategy are:

- The Biodiversity Offset Strategy has been developed based on NSW State and 2007 Commonwealth policy guidelines. For the EPBC Act listed species identified within the Project Boundary the Biodiversity Offset Strategy should have been developed in accordance with SEWPaC’s new Environmental Offsets Policy (2012). As stated in DSEWPC (2012), this policy “*applies to any projects currently under assessment for which a proposed decision has not yet been made*”, which includes the current Project. In addition, the Supplementary DGRs (Art 8) specifically states that “*reference should be made to the department’s draft policy statement, including any revisions to this statement*”.
- Some information on costs of the Biodiversity Offset Strategy has been provided. However limited detail is provided and this is unlikely to meet the requirement of the Supplementary DGRs (Art 8c) to provide “*an analysis of cost, both financial and other, related to offsets*”.

- The Biodiversity Offset Strategy has not appropriately taken into account the precautionary principle which is required in the absence of scientific certainty in accordance with SEWPaC's Environmental Offsets Policy (2012). Much of the Subsidence Impact Limit area could not be surveyed due to limited access and difficult terrain, however it is highly likely that EPBC and TSC Act species inhabit the area. Due to the likely impact of subsidence on these areas, appropriate offsets for the Subsidence Impact Limit area that were unable to be surveyed should be included in the Biodiversity Offset Strategy.
- Offset areas have been proposed for land beside the Project infrastructure. It is highly likely that these areas will be indirectly impacted by mining activities over the life of the Project. Although the Proponent has proposed a buffer (of unknown size) around the offsets to allow for greater protection, highly mobile fauna (especially species with large territories) are likely to avoid these areas. Disturbance tolerant species (e.g. Noisy Miner *Manorina melanocephala*) will probably use the offset areas, but sensitive species (especially threatened) may not use these areas near to the disturbance source (i.e. negating one of the purposes of the offset).
- No details have been provided as to how offsets for impacted vegetative and fauna species have been calculated.

7.4 Conclusions and Recommendations

In general, the 2013 EIS provides a much more comprehensive understanding of the ecological characteristics present within the Project Boundary than was previously presented in the 2010 EIS. Most of the 2012 DGRs and Supplementary DGRs have been addressed. However, there are several requirements that have not been adequately addressed, particularly in relation to the coverage of baseline surveys, assessment of indirect impacts and the approach to the Biodiversity Offset Strategy.

Clarification of the issues identified will be required to ensure that the potential impacts on flora and fauna are adequately assessed and an appropriate management and offset strategy are in place to address these impacts. Further survey work will also be required if these issues are unable to be addressed based on existing data.

One of the key 2012 DGRs is for the EIS to provide (3b) "a description of the distribution and abundance of threatened species", however this requirement has not been adequately met in the revised EIS. While a statement of abundance and distribution of threatened species has been included for the eastern portion of the Project Boundary, no detailed threatened species population distribution and abundance estimates of the Project Boundary (as a whole) and surrounding area were provided. Threatened species abundance estimates should be calculated for the entire Project Boundary, including estimates for the surrounding area (i.e. within a buffer zone).

The flora baseline surveys were found to have not adequately covered the Subsidence Impact Limit area. It is therefore recommended that further detailed surveys for flora be conducted to establish a robust flora baseline for the Subsidence Impact Limit (or justification provided as to why significant areas are not able to be surveyed within this zone, and particularly in Jilliby State Conservation Area and Wyong State Forest).

Very limited detail was provided regarding potential indirect impacts on flora and fauna in the area surrounding the Project Boundary. Furthermore, fauna surveys were not conducted in a continuous buffer zone around the Project Boundary to allow for the consideration of potential impacts on highly mobile fauna, as well as indirect impacts on flora and fauna as required by OEH's *Survey and Assessment guidelines* (2009). It is therefore recommended to conduct further baseline surveying within a continuous zone around the Project Boundary. Potential indirect impacts on flora and fauna should then be described in detail in EIS and management measures should be developed accordingly.

The Biodiversity Offset Strategy for flora and fauna species in the 2013 EIS does not take into account the new Environmental Offsets Policy released in October 2012. It is therefore recommended that the Biodiversity Offset Strategy for threatened species is revised based on the latest policy (or evidence be provided of approval from SEWPaC that assessment based on the State recommendations is acceptable). This should also include a much more comprehensive costing of the offsets, to ensure the Supplementary 2012 DGRs are met appropriately.

Considering much of the Subsidence Impact Limit area could not be surveyed due to difficult terrain or access limitations, the precautionary principle should be adopted. It is highly likely that EPBC and TSC Act species inhabit the area and due to the likely impact of subsidence, appropriate offsets for this area should be included in the Biodiversity Offset Strategy. DSEWPaC be consulted regarding the most suitable way to offset the impact on the threatened species potentially inhabiting this western portion of the Project Boundary.

Finally, it is recommended that the suitability of currently proposed offsets for fauna habitat should be reviewed as the proposed offset areas include land is located directly adjacent to the mine disturbance areas and therefore will not be appropriate offsets until the closure of the mine.

A detailed *environmental management plan* should be developed as required by the Supplementary DGRs (Art 7e). This should include specific sections covering terrestrial and aquatic biodiversity management and monitoring. It is hard to assess the impact on the ecology from the Project without an explicit ecological management and monitoring plan.

8 Noise and Vibration

8.1 Context

The impacts of exposure to noise emission from industrial activity (and associated activities, including construction, operations, and transport of personnel / product) range from nuisance levels to intensities that may degrade health and well-being. While there is variability in response to elevated noise according to individual receptors, decibel levels and the frequency and timing of disturbance; scientific evidence has demonstrated that impacts from construction and industrial operations can sufficiently compromise health and well-being for humans and animals to warrant diligent impact assessment and mitigation measures where required.

Similarly, vibrations resulting from construction or industrial operations may impact nearby receptor due to the nuisance of sustained vibration to potentially compromising the integrity of adjacent structures or geotechnical stability of landforms.

For their 2013 EIS, the Wallarah 2 Coal Project conducted assessments to determine whether noise and vibration from construction or operations may pose a threat to nearby receptors, and if so, to develop management and mitigation measures to avoid or mitigate for potential impacts.

8.1.1 Reasons for Refusal 2010

Noise and vibration were not identified as sources for refusal of the 2010 EIS.

8.1.2 New Director Generals Requirements

The Director General's environmental assessment requirements (DGRs) for the preparation of an EIS for the proposed Wallarah 2 Coal Project, dated January 12, 2012, included the following applicable language for noise and vibration and applicable general requirements (supplementary requirements added to the original DGRs for the Project):

General Requirements Relevant to Noise and Vibration

"The Environmental Impact Statement (EIS) for the development must meet the form and content requirements in Clauses 6 and 7 of Schedule 2 of the Environmental Planning and Assessment Regulation 2000.

In addition, the EIS must include a:

- *detailed assessment of the key issues specified below, and any other significant issues identified in this risk assessment, which includes:*
 - *a description of the existing environment, using sufficient baseline data;*
 - *an assessment of the potential impacts of all stages of the development, including any cumulative impacts, taking into consideration relevant guidelines, policies, plans and statutes; and*
 - *a description of the measures that would be implemented to avoid, minimise and if necessary, offset the potential impacts of the development, including proposals for adaptive management and/or contingency plans to manage any significant risks to the environment; and*

- *consolidated summary of all the proposed environmental management and monitoring measures, highlighting commitments included in the EIS.”*

Key Issues Relevant to Noise and Vibration

“Noise - including a quantitative assessment of potential:

- *construction, operational and transport noise impacts;*
- *offsite road noise impacts; and*
- *reasonable and feasible mitigation measures, including evidence that there are no such measures available other than those proposed; and - monitoring and management measures, in particular real-time and attended noise monitoring”*

8.1.3 Earth Systems Review 2010

The Earth Systems’ review of the 2010 EIS indicated that the noise assessment does not adequately identify and assess the potential construction noise impacts from the surface facility works.

The noise assessment does not identify and consider future changes in land uses such as the proposed Warnervale Town Centre and the Wyong Employment Zone when determining the land zoning and noise amenity goals in accordance with the *NSW Industrial Noise Policy*. It is also noted that no reference measurement or assessment locations were established at the proposed Warnervale Town Centre.

8.1.4 New Regulatory Requirements

New regulatory requirements or updates to regulatory requirements following the submission of the 2010 EIS include:

- *NSW Road Noise Policy* (OEH 2011); and
- *Assessing Vibration: a Technical Guideline* (OEH, 2009).

8.2 2013 EIS

Noise

Additional ambient noise monitoring was undertaken for the 2013 EIS. Post 2007 noise monitoring was comprised of the measurement of ambient sound pressure levels at six locations, conducted for one week (24 hours/day) in March 2012. Measurements were recorded at five of the locations used for previous assessment and one new location, on Propan Way in Blue Haven, set-up to account for Warnervale Town Centre and the Wyong Employment Zone.

Results were then evaluated to establish (or confirm) Rating Background Levels (RBL) and to establish the Project Specific Noise Criteria (PSNC) for the Project. Quantitative and qualitative methods were used to evaluate whether noise from construction, blasting, road traffic and rail traffic during daytime, evening or night would exceed PSNC during varying meteorological conditions and whether sleep disturbance criteria may be exceeded.

Daily traffic estimates for construction personnel were elevated to a predicted level of 440 two-way car movements at Buttonderry Site, 800 two-way car movements at Tooheys Road Site and 90 at the Western Ventilation Shaft (modified from 290, 500 and 90, respectively).

Contour plots were generated that indicate the areas of exposure to noise levels above 40 and 45 dBA for daytime and evening operations. The proponent developed 'feasible and reasonable' noise control measures that will be incorporated into Project construction and operations.

As per the New DGRs, the 2013 EIS includes Proponent development of a leading practice noise monitoring network that will include quarterly attended noise monitoring during construction and operations, a network of real time noise monitors, a meteorological monitoring systems, and regular correlation of real time noise monitoring data with meteorological station data.

Vibration

Structural damage assessment criteria and human disturbance were assessed for the construction phase of the Project, with predictions of vibration levels from dynamic rollers and rock hammers (identified for their potential to create the highest levels of ground vibration during construction) included in the assessment.

Dozers and trucks were identified as key sources of vibration from mining related activity and were therefore assessed for their potential to impact private receptors.

Qualitative modelling was conducted for blasting during construction to determine whether air blast overpressure criteria and ground vibration criteria would be satisfied at the closest private receptors.

8.3 Key Issues

Noise

Ambient noise measurement was conducted at thirteen (13) potentially sensitive receptor locations. Modelling was utilised for estimates of: construction noise, construction vibration, and blasting; operational noise and vibration at the Tooheys Road Site and Buttonderry Site, road and rail traffic noise; and sleep disturbance assessing whether Project Specific Noise Criteria (PSNC) may be exceeded and/or structural or human comfort criteria from vibration or blasting would be exceeded.

While some data was provided for estimates of unmitigated noise generation, the noise modelling for conditions at sensitive receptors assumed the implementation of recommended noise attenuation components in Project development and operations. The exception to this was for predicted short term noise disturbance from train horn, wagon bunching, coal bin loading, and transfer chute plates, where the results of unmitigated and mitigated noise modelling is provided.

The following potentially excessive noise related issues are identified in the 2013 EIS:

- Noise modelling indicates that construction noise levels have the potential to exceed the PSNC at Amberwood Close (Project-owned residences). The predicted noise levels of 50 – 55 dBA exceed the daytime PSNC of 46 dBA.
- The specialist study (Appendix N) indicates that predicted noise levels may exceed the PSNC for more than 25% of a contiguous block of land for two privately owned properties in single land ownership in the Tooheys Road Site area, Receiver 57 (K.R. Drake) and Receiver 58 (K.L. Norman). Atkins Acoustics (Appendix N) identified two additional private receptors, Receiver 56 (The Commissioner for Main Roads) and Receiver 152 (Roads and Traffic Authority of NSW) where predicted noise levels exceed the PSNC for more than 25% of the land.
- Noise contributions would exceed recommended sleep disturbance criteria if unmitigated, including: train horn, wagon bunching, coal bin loading and transfer chute plates. The 2013 EIS

indicates that with implementation of noise controls described in Section 7.8.4 of the EIS, modelling has shown that noise levels are predicted to remain below sleep disturbance criteria.

The 2013 EIS defines daytime construction hours of 7am to 6pm on Saturday and 8am to 6pm on Sundays and Holidays. DECCW's recommended hours are 8am to 1pm on Saturday and no work (or blasting) on Sundays or public holidays.

Vibration

Assessment of construction and operations equipment indicated that the respective equipment that would create the greatest vibration will satisfy human comfort criteria and structural damage assessment criteria at all private receptors.

Qualitative modelling results indicate that air blast overpressure criteria and ground vibration criteria will be satisfied at the closest private receiver with the employment of Maximum Instantaneous Charge and 'detailed planning of any blasts needed to assist in construction of either surface facilities or underground activities' (2013 EIS, Section 7.8.3).

The management and mitigation for blasting has not been assessed to the level required during construction and operations. Specific management measures should be incorporated into the Noise Management Plan that addresses the procedure for implementing blasting.

8.4 Conclusions and Recommendations

The impact assessment and management strategies for noise were conducted according to applicable guidelines, with identification of appropriate PSNC and few predictions of exceedences of PSNC. However, it is important to note that noise modelling estimates for operations for the Tooheys Road and Buttonderry Sites assume Project adoption of specific strategies for ameliorating noise from the site. The validity and applicability of predicted outcomes for Rating Background Levels and potential exceedences of PSNC should only be considered applicable if the Project implements all the 'feasible and reasonable noise control' mitigation and management measures listed in Section 7.8.4 of the EIS.

Potential exceedences of PSNC listed in Section 7.8.3 of the EIS should be considered 'best case scenario' residual impacts that would apply if each of the management measures listed in Section 7.8.4 of the 2013 EIS and Sections 3.1.1 and 3.2.1 of the *Noise and Vibration Impact Assessment Report* (Appendix N) are implemented.

The EIS specifies that the WACJV will develop a Noise Management Plan for construction and operation of the Project that will incorporate noise attenuation and management. The Noise Management Plan will also identify a noise monitoring network comprised of quarterly attended noise monitoring, correlation of real time noise monitoring results with meteorological station data, a network of real time noise monitors, and trigger levels developed to notify site supervisors of noisy operations.

Earth Systems recommends WACJV incorporation of the following measures, should the Project be granted approval:

- Construction of the preferred option (refer to Appendix N), with incorporation of all the Feasible and Reasonable Noise Control measures identified in Section 7.8.4 of the EIS. As the majority of management relies on design elements and equipment selection (and modelling assumed their implementation), anticipated noise levels are dependent on this commitment.
- Development of a Noise Management Plan that includes targeted actions that would be employed following exceedence of trigger values;

- Identification (and justification) of key sensitive receptors in the Noise Management Plan for incorporation into the monitoring program.
- Specific provisions for identifying and contacting applicable residents that would be impacted by construction that occurs outside of the recommended hours (e.g. after 6 p.m. Monday – Friday, after 1 p.m. on Saturday, and on Sunday);
- Provision for investigations and response to complaints.

Vibration

Equipment identified to pose the greatest risk regarding vibration during construction and operations are predicted to satisfy structural damage assessment criteria and human comfort criteria. Impacts from blasting, however, are expected to require the employment of Maximum Instantaneous Charge (MIC) and 'detailed planning of any blasts needed to assist in construction of either surface facilities or underground activities' (2013 EIS, Section 7.8.3).

Earth Systems recommends WCJV incorporation of the following measures, should the Project be granted approval:

- Inclusion of vibration management in the Noise Management Plan or development of a Vibration Management Plan prior to construction;
- The plan should require MIC for required blasting unless it can be conclusively demonstrated that it is not required for a specific blasting scheme;
- The plan should identify and develop specific management requirements for blasting to replace the ambiguous language that is currently applied; and
- The plan should identify provision for investigations and response to complaints.

9 Visual Amenity

9.1 Context

9.1.1 Reasons for Refusal 2010

No reasons associated with Visual Amenity were cited in the 2010 Project Refusal.

9.1.2 New Director General's Requirements

The Director General's Requirements have been updated in 2012 to include the following:

Visual - including:

- *A detailed assessment of the:

 - *Changing landforms on site during the various stages of the project; and*
 - *Potential visual impacts of the project on private landowners in the surrounding area as well as key vantage points in the public domain, and particularly the proposed Warnervale Town Centre, Wyong Employment Zone and the major elements of the public domain linking these two.**
- *A detailed description of the measures that would be implemented to minimise the potential visual impacts of the project.*

9.1.3 Earth Systems Recommendations 2010

Earth Systems review of the EIS in 2010 found that the natural feature baseline for the project needed to be strengthened to provide a more accurate representation of the visual character of the site. It was further noted that no mitigation and management measures were presented

9.1.4 New Regulatory Requirements

There are no new regulatory requirements directly applicable to the visual amenity aspects of the EIS.

9.2 2013 EIS

Visual Impacts are discussed in Section 7.16 of Chapter 7 of the EIS Report by Hansen Bailey. This section was based on the specialist studies provided as appendices to the EIS as follows:

- Appendix U: The Design Partnership (2013) Wyong Areas Coal Joint Venture, Wallarah 2 Coal Project Visual Impact Assessment.

9.3 Key Issues

The specialist study conducted for the Project provides a description of the existing visual character of the proposed surface facility sites as well as key visual elements of the region. The study makes good use of topographic surveys and aerial photographs in its baseline assessment. Whilst a generally sound assessment from key viewpoints to the proposed surface facility sites has been made, our review notes the following limitations:

Director General's Requirements

The Director General's Requirements outline that the assessment should provide 'a *detailed assessment of changing landforms on site during the various stages of the project*'. The EIS Report has not broken down the anticipated visual impacts by project phase and as such does not meet the DGR.

Warnervale Town Centre

In 2010 it was noted that the Warnervale Town Centre development was not adequately considered in respect to visual impacts. This was addressed in the 2013 EIS, with visual impacts upon the site considered in the Main EIS Report. The report suggests that it is unlikely to be visually impacted as a result of the ridgeline and existing vegetation.

A viewshed analysis for the Warnervale Town Centre has been deduced from that conducted for Bruce Crescent, which is closer to the proposed project site. The viewshed analysis in Appendix U indicates that the site will not be visible due to topography.

Visual Landscape Character Assessment Viewpoints

The 2013 EIS Report stated that a Visual Landscape Character Assessment was undertaken to determine key viewpoints for the project, all of which were for roads. This has mitigated the discrepancy noted in the methodology of the 2010 EIS Report, which stated that key viewpoints for the assessment will be from public spaces such as parks, roads and lookouts; however all the key viewpoints appeared to be from roads only.

Bushell's Road Residences

The 2010 EIS Review indicated that it was unclear whether the residential properties on Bushell's Ridge Road would have partial views of the Project Site. The 2013 EIS indicates in the Social Impact Assessment that the residents were unlikely to have views of the site, however, they would have views to the Buttenderry Site when using Hue Hue Road or the Freeway.

Surface Facility Infrastructure Exterior Palette

Appendix U indicates that surface facility infrastructure and buildings will be constructed in neutral colours as to blend into the natural vegetation. Heights and materials used for elevated structures are indicated in limited detail in Appendix U.

Photomontages

The photomontages of the Tooheys Road Site from the F3 Freeway and Motorway Link Road show that the coal stockpiles and gantry and conveyor are visually prominent. A proposed concept landscape design is provided in Appendix A of Appendix U, which is anticipated to mitigate these views.

Landscape Concept Designs

Landscape Concept Designs have been prepared for both sites which incorporate management and mitigation measures to minimise the potential visual impacts of the Project. Although the focus of the



mitigation measures proposed is on the continuation and enhancement of endemic vegetation to screen the surface facilities and stockpiles from major travel routes, the plans do not identify any of the endemic species proposed to be planted. The Landscape Concept Designs should list the proposed endemic flora as a palette to give an indication of the mature height, density and bulk of vegetation.

9.4 Conclusions and Recommendations

The visual assessment conducted for the Project provides a good site analysis and identification of key viewpoints, assessment of potential visual impacts and recommendations for mitigation measures to minimise impacts of the Project.

10 Traffic and Transport

10.1 Context

10.1.1 Reasons for Refusal 2010

No reasons associated with Traffic and Transport were cited in the 2010 Project Refusal.

10.1.2 New Director General's Requirements

The Director General's Requirements have been updated in 2012 to include the following:

Traffic and Transport- including:

- *A detailed assessment of the project on the capacity, efficiency and safety of the:*
 - *Rail network, having regard to the strategic objectives for passenger and freight rail network (such as Northern Sydney Freight Rail Corridor Project); and*
 - *Local road network, with particular regard to the Wallarah interchange (F3 Freeway and Sparks Road), Motorway Link Road / Tooheys Road intersection, and the Sparks Road / Hue Hue Road intersection; and*
- *A description of the measures that would be implemented to maintain and/or improve the capacity, efficiency and safety of the road and rail networks in the surrounding area over the life of the project.*

10.1.3 Earth Systems Recommendations 2010

Earth Systems' 2010 EIS Review recommended the development of a supplementary environmental assessment that included consideration of the findings of further traffic assessment investigations currently being undertaken by the Proponent.

Key issues identified included:

- Limited consideration of road safety aspects, and
- No evidence of a detailed study of the capacity, efficiency and safety of the rail network.

10.1.4 New Regulatory Requirements

Since submission of the 2010 EIS, no significant new regulatory requirements directly applicable to the Traffic and Transport assessment for the Wallarah 2 Coal Project.

10.2 2013 EIS

Traffic and Transport Impacts are discussed in Chapter 7 of the main EIS Report by Hansen Bailey. This section was based on the specialist studies provided as appendices to the EIS as follows:

- Appendix Q: Parsons Brinckerhoff Australia (2013) *Wyong Areas Coal Joint Venture, Wallarah 2 Coal Project Traffic Impact Study*.
- Appendix R: Rail Management Consultants Australia (2013) *Walarah 2 Coal Project Rail Study*

10.2.1 Traffic and Transport

Traffic and Transport is discussed in Section 7.12 of Chapter 7 of the EIS. This section is a summarised version of the Traffic and Transport Assessment in Appendix by Parsons Brinckerhoff (PB). Issues considered in the 2013 assessment additional to those considered in 2010 included:

- A review of existing crash data and road safety deficiencies;
- A traffic impact analysis was performed for key intersections in the vicinity of the Project using intersection simulation software (SIDRA). The intersection analysis was applied to future scenarios with and without the proposed Project to account for background traffic growth as well as anticipated traffic generated by the Project. The analysis was performed on the following intersections:
 - *Walarah Interchange (F3 Freeway and Sparks Road);*
 - *Sparks Road - Hue Hue Road; and*
 - *Motorway Link - Tooheys Road interchange.*
- A cumulative assessment including surrounding developments and their impacts on the surrounding road network.
- Recommendations of potential mitigation measures and road safety improvements.

10.2.2 Rail Study

Section 7.13 of Chapter 7 of the EIS also details potential impacts upon the local and regional rail network. The relevant section is based upon a detailed Rail Study that was developed by Rail Management Consultants Australia (RMCA) as an Appendix to the 2013 EIS to address the Director's General Requirement relating to rail services. The study included:

- A description of the existing rail network and its capacity; and
- A discussion of the anticipated impacts of the Project upon the capacity of the rail system.

10.3 Key Issues

Director General's Requirements

The review of the traffic assessment found that it provided a detailed analysis of the forecast traffic and transport impacts (including rail) on the surrounding road network that are likely to arise as a result of the Project.

A traffic impact analysis was performed for key intersections in the vicinity of the Project using intersection simulation software (SIDRA), including:

- *Walarah Interchange (F3 Freeway and Sparks Road);*
- *Sparks Road - Hue Hue Road; and*
- *Motorway Link - Tooheys Road interchange.*

Cumulative Impacts

The 2010 EIS Review noted a lack of consideration of potential cumulative traffic impacts associated with traffic flows generated from new developments in the area. This has been addressed in the 2013 EIS, giving reference to the detailed cumulative assessment as undertaken in Section 1.4 of Appendix Q.

Consideration of new developments

The EIS states that a Traffic Management Plan would be required prior to construction, which would include any official revised traffic predictions covering new developments in the area. It was noted in 2010 that for the EIS to adequately assess the potential traffic impacts of the Project on the surrounding road network, the traffic assessment would require revision to take into account the traffic generated by the Warner Industrial Park (Precinct 14). As such, in 2010 WSC advised Earth Systems that the revised intersection analysis would need to re-evaluate the following intersections:

- Sparks Road / Hue Hue Road;
- Sparks Road / Precinct 14; and
- Hue Hue Road / Precinct 14.

These intersections have been evaluated in the 2013 EIS (Appendix Q), giving consideration for background traffic associated with Precinct 14 (Warner Industrial Park / Wyong Employment Zone) in scenario modelling for construction and operations phases, and 'no-project' scenarios.

Internal Haulage Route

As noted in the 2010 review of the EIS, the 2013 Report has not identified the internal haulage routes to be utilised for the movement of excavated material within the site.

Chapter 2 of the EIS Main Report notes that all excavated material from the Tooheys Road and Buttonderry sites will be re-used onsite for the creation of a perimeter bunding and landscaping features. However, Appendix Q of the EIS states that "*the construction traffic management plan should also be used to develop site-specific management measures once the construction methods and haulage routes are finalised*". This indicates that the route is at present unconfirmed, and as such, the potential environmental impacts of utilising such an internal route are unable to be identified.

Haulage of spoil offsite

The haulage route for excavated material to be moved offsite from the Western Ventilation Shaft has not yet been confirmed.

An estimated 5700 m³ of material from the excavation of the Western Ventilation Shaft is required to be taken offsite by road. It is quoted that "*at this stage the destination of this material has not been identified*", with a suggestion that upon confirmation of the route, efforts would be made to minimise impacts on the road network.

WSC expressed concerns during the 2010 Review about the potential adverse impacts on the road network due to the accelerated loss of pavement life caused by the additional truck movements during the construction of the Western Shaft. The anticipated number of truck movements are detailed in the 2013 EIS Report (Appendix Q), however, their impacts on pavement and drainage structures are not covered in

specific detail. Section 8 of Appendix Q addresses road dilapidation and recommends that heavily utilised roads are monitored, and for any impacts beyond reasonable wear and tear to be addressed immediately by WACJV or the road authority.

Traffic Management Plans

A Traffic Management Plan has not been developed as part of the 2013 EIS.

Appendix Q of the EIS indicates that Traffic Management Plans would be developed for the construction of rail bridges for the new rail spur line crossing over Tooheys Road, as well as Traffic Control Plans for road works to be undertaken. It is noted that a specific management plan for this issue is not mentioned in the Statement of Commitments or in Chapter 8 of the EIS (Table 103: Project Management and Monitoring Measures).

Temporary Road Closures of Brothers and Tooheys Roads

The traffic assessment indicates that both Brothers Road and Tooheys Road would be upgraded as part of the Project and will likely be closed temporarily. Whilst the assessment does indicate that a Traffic Management Plan would be developed in coordination with road authorities and landholders to manage traffic along Tooheys Road during construction, limited details are provided on the potential impacts on traffic flows.

Rail Impacts

Appendix R: Rail Study notes that the Wyong – Newcastle Rail System is almost wholly within RailCorp's network, with a small area of overlap with the Australian Railway Track Corporation (ARTC). A number of planned upgrades are being introduced to meet anticipated demand from a number of projects within the area, irrespective of the approval of the Wallarah 2 Coal Project.

It is anticipated that the project will require an average of 4.33 trains per day during operations for coal transport, with capacity for 6 trains per day 6 days per week. The additional services as a result of the project are anticipated to result in level crossing closures for an additional 56 minutes per day.

Three scenarios have been modelled in conjunction with RailCorp, the third option inclusive of the installation of new passing loops at Awaba North. This is the selected option anticipated to have the least impacts upon existing services, as well as catering for anticipated future growth in service requirements.

The installation of the Awaba North Passing Loops has been recommended as a mitigation and management measure for rail impacts. This is a measure to be considered by RailCorp and is outside the scope of WACJV's individual capacity to manage the capacity, efficiency and safety of the local and regional rail network.

10.4 Conclusions and Recommendations

In general, the 2013 EIS document addresses the major traffic and transport requirements of the Director General, as well as the issues noted by Earth Systems in the 2010 EIS Review. It is clear that further investigations and studies have been completed to meet these requirements and identified gaps.

Further investigation is required to confirm the haulage route and its potential environmental impacts, and to confirm the off-site disposal site for spoil from the excavation of the Western Ventilation Shaft and whether the transport of spoil would have an impact on existing road use to the site.

A Traffic Management Plan should be developed immediately to ensure all stakeholders have the opportunity to comment on the recommended management and mitigation measures and to understand any potential residual impacts. Specific Traffic Management Plans for the construction of rail bridges for



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the new rail spur line crossing over Tooheys Road, as well as Traffic Control Plans for road works to be undertaken should also be developed as recommended by Parsons Brinckerhoff in Appendix Q.

An evaluation of potential mitigation measures for managing rail network capacity limitations outside the proposed ARTC rail network upgrades would support the Traffic and Transport assessment in comprehensively meeting the Director General's Requirements.

11 Archaeology and Heritage

11.1 Context

11.1.1 Reasons for Refusal 2010

The 2010 EIA prepared for the Wyong Areas Coal Joint Venture was rejected in 2011 because there was uncertainty around the heritage impacts of the Project. In particular, the refusal was issued because insufficient surveying was conducted within the western portion of the site (i.e. above the mine) and the impact of subsidence on the heritage characteristics of the site was not adequately addressed.

11.1.2 New Director General's Requirements

The Director General's Environmental Assessment Requirements and a Supplement to the Director General's Requirements were issued to the Proponent in 2012. The primary document detailing the Director General's requirements states that the EIS must address the following:

Heritage

- *An Aboriginal cultural heritage assessment (including both cultural and archaeological significance) which must:*
 - *Demonstrate effective consultation with Aboriginal communities in determining and assessing impacts, and developing and selecting mitigation options and measures;*
 - *Outline any proposed mitigation and management measures (including an evaluation of the effectiveness and reliability of the measures); and*
- *A Historic heritage assessment (including archaeology) which must:*
 - *Include a statement of heritage impact (including significance assessment) for any State significant or locally significant historic heritage items; and*
 - *Outline any proposed mitigation and management measures (including an evaluation of the effectiveness and reliability of the measures)*

The Supplementary Director General's Requirements state that:

Consultation

14. Any consultation about the action, including:

- a. Any consultation that has already taken place;*
- b. Proposed consultation about relevant impacts of the action;*
- c. If there has been consultation about the proposed action – any documented response to, or result of, the consultation.*

15. Identification of affected parties, including a statement mentioning any communities that may be affected and describing their views.

11.1.3 Earth Systems Recommendations 2010

Generally, one of the limitations of the assessment for the Project included a lack of detail regarding the Chance Find Procedure and monitoring program. Further details regarding these aspects should have been provided.

11.1.4 New Regulatory Requirements

There are no new major regulatory requirements regarding cultural and historic heritage since the 2010 EIS submission. There are some minor amendments to acts that have or are still in the process of being incorporated. The current 2013 EIS has included a summary of all relevant legislation.

11.2 2013 EIS

Additional archaeological, cultural and historic surveys were conducted within the eastern and western portions of the proposed mining Project area since the 2010 EIS submission (Table 11.1). The main method to survey ridgelines and waterways in accessible areas was to walk transects that followed the topography, while surveying the ground for evidence. Similar to pre-2010 surveys, the locations of these transects were limited by accessibility to private property and difficult terrain. Additionally, only a small area could be searched due to dense ground cover, with test pits only being dug in one area.

Table 11.1 A summary of additional archaeological, cultural and historic heritage field sampling within the Project Boundary for the Wyong 2 Coal Joint Venture

Year	Project Boundary area surveyed	Area/s assessed	Methodology or description
2010	Eastern portion (Project footprint)	Tooheys Road site, banks of: <ul style="list-style-type: none"> • Wallarah Creek 	60 test pits measuring 1 x 1 m
2010	Western portion (Subsidence Impact limit)	Ridgelines in the Wyong State Forest/Jiliby SCA: <ul style="list-style-type: none"> • Whitemans Ridge; • Little Jiliby Ridge; • Harris Point; and • Ridgelines accessed on the Watagan Forest Road 	Restricted transects along ridgelines (i.e. did not follow arbitrary linear transects)
		Waterways: <ul style="list-style-type: none"> • Calmans Gully; • Myrtle Creek; • Little Jiliby Jiliby Creek; • Armstrongs Creek; and • Unnamed waterway to the east of Smithys Road West 	Restricted transects along creeks (vegetation and topography limited)
		Honeysuckle Park	Meandering transects (cleared land)
2011	Western portion	Ridgelines in the Wyong State	Restricted transects along

(Subsidence Impact limit)	Forest/Jilliby SCA: <ul style="list-style-type: none"> • Spotted Gum Ridge; • Woodwards Ridge; • Pole Ridge; • Big Pole Ridge; • Daniels Ridge; • Calmans Ridge; • Couatts Ridge; • Goldsmiths Ridge; • Whitemans Ridge; and • Little Jilliby Ridge 	ridgelines (i.e. did not follow arbitrary linear transects)
	Waterways: <ul style="list-style-type: none"> • Myrtle Creek; and • Little Jilliby Creek 	Restricted transects along creeks (vegetation and topography limited)

11.3 Key Issues

- Much of the Project Boundary, particularly within the eastern part of the Subsidence Impact Limit area was not surveyed due to accessibility restrictions. It is understandable that access may be restricted by private land or difficult terrain. However, as Aboriginal cultural and historic heritage sites have been found elsewhere within the Project Boundary, it is highly likely that other sites exist in inaccessible areas. Although it may be currently impossible to survey these undiscovered sites, these potential sites should still be considered within mitigation and management measures (under the precautionary principle). Currently, mitigation measures are only applicable in areas where sites have been found and if sites are discovered during earthworks.
- Although most sites found were considered to have little archaeological, aesthetic or historic value, Aboriginal cultural significance has simply been considered as "high" for all sites. The NSW OEH (2010) guidelines state that "*when identifying values, it is not necessary to agree with or acknowledge the validity of each other's values but it is necessary to document the range of values identified.*" The conclusion that all sites "*are held in high cultural value by the local Aboriginal community*" may be partly accurate, but it is more likely that this value ranges on a broad scale. There was limited discussion of how these cultural values were assigned/assessed, whether they were, for example, spiritual sites, and how did the Aboriginal representatives come to categorise all sites as "high".
- Since the 2010 EIS and the completion of field work in 2011, two new corporations became Registered Aboriginal Parties (RAPs). These two corporations feel that they have been inadequately consulted regarding the Project and were not asked to assess the significance of found sites. With the information collected, this could certainly have been done before the EIS was submitted (without necessarily a site visit). It appears that an assessment was only made by representatives that assisted with field surveys. However, it also is stated that every attempt has been made to organise meetings with these RAPs and have been largely unsuccessful. It is a difficult issue and probably requires the input of an independent third-party (i.e. not the heritage consultants or the Proponent).

- These new RAPs are also concerned that the Proponent has not adequately included their connection to the land within the Project Boundary, placing *"the Project Boundary within Darkinjung Country although in an area in close proximity to the Awabakal (to the north) and the Daruk to the south"* (section 4.1; Appendix S). It is understandably difficult to ascertain the exact boundaries of the different Aboriginal group's pre-European settlement. However it would be a relatively minor change to the EIS and appendices to recognise that many RAPs and people have a connection to the land within the Project Boundary.
- The management plan has not been developed and details regarding its development and contents were not extensive. All interested stakeholders should also be consulted during this process.

11.4 Conclusions and Recommendations

In general, a comprehensive survey and report of the Aboriginal cultural and historic heritage of the areas surveyed within the Project Boundary has been prepared. The inaccessibility of the western portion of the Project Boundary and wide-spread low visibility of sites surveyed makes it particularly difficult to ascertain the number and type of cultural and historic sites that may be impacted by the Project. Since these issues are not due to a lack of survey effort on behalf of the Proponent, general mitigation measures and the (to be prepared) management plan should cover all areas within and surrounding the Project Boundary (i.e. not limited to areas where sites were found).

For the most part, it appears every effort has been made to consult with most (if not all) RAPs. As consultation with the community and RAPs is such a crucial component of the Aboriginal cultural and historic heritage assessment, the Proponent should continue attempts to consult any interested parties. However, it is difficult to independently ascertain the progress of consultations from the EIS and associated appendices. Perhaps an independent group could liaise with stakeholders and the consultants conducting the surveys and writing the management plan, since attempts by the heritage consultants to arrange meetings with all stakeholders have been unsuccessful.

12 Socio-Economic Planning

12.1 Context

12.1.1 Reasons for Refusal 2010

The 2010 Project Application refusal did not cite any reasons associated with Social Planning.

12.1.2 New Director General's Requirements

The Director General's Requirements have been updated in 2012 to include the following:

Social and Economic – including an assessment of the:

- **Potential impacts on local and regional communities including:**
 - *Increased demand for local and regional infrastructure and services (such as housing, childcare, health, education and emergency services); and*
 - *Impacts on social amenity;*
- **A detailed description of the measures that would be implemented to minimise the adverse social and economic impacts of the Project, including any infrastructure improvements or contributions and/or voluntary planning agreement or similar mechanism**
- **Impacts on Jilliby State Conservation Area- including impacts on the...recreational values of the reserve and landowner consent issues.**

Supplementary Director General's Requirements include:

- **A description of the short term and long term social and economic implications and/or impacts of the project.**

12.1.3 New Regulatory Requirements

No significant new regulatory requirements or updates to regulatory requirements relevant to social planning were identified following the submission of the 2010 EIS.

12.2 2013 EIS

Section 7.17 of the Main EIS Report discusses the findings of the Social Impact Assessment. This section is based upon the Social Impact Assessment provided as Appendix V – The Wallarah 2 Coal Project Social Impact Assessment (2012) Martin and Associates Pty Ltd.

Section 7.7 of the Main EIS Report discusses the finding of the Health Risk Assessment. This section is based upon the Health Risk Assessment provided as Appendix M – The Wallarah 2 Coal Project Health Risk Assessment (2012) PAE Holmes.

A Benefit Cost Analysis was undertaken for the Project as part of the broader Economic Impact Assessment and the findings of our review are discussed in Chapter 12 of this Report.

Key tasks undertaken for the Social Impact Assessment (Appendix V) included:

- An assessment of relevant government policy and guidelines;
- Characterisation of the existing community, current behaviour and interactions of residents;
- Characterisation and assessment of Project perceptions by those within the directly affected area;
- Assessment of potential Project impacts upon the population, temporary accommodation and housing;
- Identification of the present use of social infrastructure and observed or perceived gaps from a community perspective;
- Discussion of implications for the directly affected area, particularly the likely spatial distribution of any non-local operational and construction work forces and their impacts on the community;
- Discussion of implications for the broader Secondary Study Area in relation to employment and population impacts; and
- Preparation of a social management and monitoring program to mitigate potential and perceived impacts.

The study was undertaken utilising information from:

- The ABS 2001 and 2006 Census Data;
- WSC Social Planning Reports;
- Community Attitude Surveys of 400 residents within the Secondary Study Area in 2006 and 2012;
- A community baseline survey conducted in 2008 with the Directly Affected Area.

Consultation was also undertaken with key relevant Wyong Shire Council (WSC) and Lake Macquarie City Council (LMCC) staff.

123 Key Issues

Director General's Requirements

The report provides very little description of the long term social and economic implications and/or impacts of the project. Short term impacts are discussed in relation to the construction and operations phase impacts, however a discussion of impacts beyond the project life span (28 years) regarding social impacts of closure is not included in this assessment. Rehabilitation and Closure is discussed briefly in Section 7.25 of the Main EIS Report however

Flow-on Employment Opportunities

An overview of the regional and local economy was well presented and Project benefits to the local economy and surrounding region have been identified. It has been estimated that 504 flow-on jobs will be created as a result of the Project (Table 90, EIS Page 224) however there remains some

discrepancies in numbers between documents, including EIS Chapter 3, Project Description; EIS Chapter 7, Impacts Management; Appendix V, Social Impact Assessment and Appendix W, Economic Impacts.

Mitigation and Management Measures

Section 7.17 of the EIS refers to a Social Management and Mitigation Program, and outlines a number of mitigation and management strategies to address social impacts.

A Social Management and Monitoring Plan has not been developed.

Project Closure

It is noted that EIS Section 7.17 and Appendix V are broken down into impact assessment of the Construction and Operations Phases. The review of the EIS Section 7.17 and Appendix V indicates that the socio-economic impacts of mine closure have not been considered.

Cumulative Impacts

There is little discussion of the Project's cumulative socio-economic impacts in relation to other proposed projects within the region or Council area. Some discussion of the Warnervale Town Centre development is provided in regard to employment opportunities, however, impacts of cumulative developments in respect to housing and demand on resources have not been discussed.

Community Health and Safety

The EIS does not provide a comprehensive assessment of all potential impacts on community health and safety associated with the Project. The Health Risk Assessment considers impacts on human health and safety associated with water quality, air quality and noise and vibration impacts.

As a result of the identified knowledge gaps and uncertainties in the Air and Water Quality assessments, the potential health and safety impacts associated with the Project should be re-evaluated to ensure they accurately reflect the anticipated environmental scenario.

Monitoring and Reporting

Appendix V notes that the Community Reference Group (CRG) will assist in monitoring the progress of the project and report back to the community. It is unclear however how monitoring of Project progress will be undertaken.

124 Conclusions and Recommendations

The Social Impact Assessment and Economic Impact Assessment appear to adequately describe the baseline of the local and regional socio-economic setting, however, there are some gaps and limitations in these studies. The main failing of this assessment is derived from a lack of clarity regarding the physical impacts and risks associated with the Project that leads to underestimation of social and economic risks.

There is a lack of consideration of long-term impacts of the Project. This includes little to no consideration of socio-economic impacts of Project closure / mine cessation. A Mine Closure Plan should be developed which would consider the potential socio-economic impacts of closure.

Some Socio-economic mitigation and management measures have been outlined however it is recommended that these are presented in the form of a structured Social Management and Monitoring Plan.

13 Benefit Cost Analysis

13.1 Context

13.1.1 Reasons for Refusal 2010

No reasons associated with Benefit Cost Analysis were cited in the 2010 Project Refusal.

13.1.2 New Director General's Requirements

A detailed assessment of the costs and benefits of the development as a whole, and whether it would result in a net benefit for the NSW community.

13.1.3 Earth Systems Recommendations 2010

The review found that the BCA lacks sufficient detail. A number of key assumptions have been made in the quantification and valuation of costs and benefits. These decisions and assumptions need to be made more explicit in order for the reader to understand the limitations of the BCA tool. Similarly the report needed to provide more information on the calculations, techniques applied and sources of information used to quantify and value the Project's benefits and costs.

As such it was recommended that a revised benefit cost analysis be developed based on the findings of the supplementary EIS.

13.1.4 New Regulatory Requirements

Since submission of the 2010 EIS, a November 2012 *Guideline for the use of Cost Benefit Analysis in mining and coal seam gas proposals* has been introduced.

13.2 2013 EIS

Section 7.18 of the Main EIS Report provides a summary of the economic impact assessment and benefit cost analysis as undertaken in Appendix W: Economic Impact Assessment conducted by Gillespie Economics in 2013.

The document is designed to evaluate the economic efficiency of the project, as well as the project's economic impacts.

13.3 Key Issues

Valuation of Monetary Impact upon affected Stakeholders

As per the NSW Government's 2012 Guideline (as above), a CBA must identify all groups in the community affected by a policy or project and values the effects on their welfare in monetary terms as the effects would be valued by the parties themselves. Neither the Main EIS Report nor Appendix W identifies all affected stakeholders and their valuation of impacts.

Identification of a Baseline Scenario

A baseline scenario has been identified for the Wallarah 2 Project, based on the performance of the Regional Economy form 2005 – 2006. The baseline scenario is mentioned in Section 7.18 of the Main EIS Report however the findings of the economic baseline assessment are not presented in a numerical form. As such, the Main EIS Report does not give a strong indication as to the numerical monetary difference between the 'with project' and 'without project' scenarios.

Further, the economic assessment is based on information provided from 2005 – 2006. Upon commencement of the Project, this data will be almost 10 years old. It is unlikely that information this old provides an accurate reflection of the current economic setting in the region, and as such, the net benefit calculated for the project is unlikely to be accurate.

Economic Valuation of Environmental and Social Impacts

To evaluate the economic value of environmental impacts, the effects of these impacts upon business (for example, on agricultural productivity) and on households (for example, on health) must be evaluated.

The economic assessment suggests that for Air Quality and Groundwater, no impacts are anticipated upon stakeholders within the area, and as such, no economic impacts can be attributed to these aspects. This EIS review has indicated that water impacts have not been adequately assessed and require further investigation, and that the determination of air quality impacts requires further modelling and assessment to ensure an accurate prediction.

Sensitivity Analysis

A sensitivity analysis was undertaken to evaluate whether the Project was sensitive to reasonable changes in assumptions regarding a number of variables. It was found that the results were 'most sensitive to decreases in the value of product coal', yet it was found that in order for the project to be deemed economical unfeasible these would need to be substantial and sustained. The sensitivity test does not determine the anticipated price of coal during the operations phase and as such it is difficult to understand how the figures were calculated.

13.4 Conclusions and Recommendations

Whilst the Benefit Cost Analysis has been conducted using a systematic method of evaluation, this review has found some key limitations in its undertaking.

The economic baseline has not been calculated in a clear manner, and is not presented in the Main EIS.

Regional economic data utilised to determine the baseline provided in Appendix W utilises data from 2005-2006, which is unlikely to provide an accurate representation of the current regional economic standing.

The EIS Process is designed to identify the environmental and social impacts attributed to the development of the Project. To conduct an effective cost benefit analysis, monetary values must be attributed to these environmental and social impacts. This review has indicated that some environmental and social impacts have not been evaluated effectively, particularly those in regard to air quality and



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water management. Consequently the monetary values attributed to environmental and social impacts are likely to be inadequate, and the overall Cost Benefit Analysis optimistic.

14 Stakeholder Engagement

14.1 Context

14.1.1 Reasons for Refusal 2010

The 2010 Project Application refusal did not cite any reasons associated with Stakeholder Engagement.

14.1.2 New Director General's Requirements

The Director General's Requirements have been updated in 2012 to include the following:

The EIS must:

- *Describe the consultation process used and demonstrate that effective consultation has occurred.*
- *Describe the issues raised by public authorities, service providers, community groups and landowners.*
- *Identify where the design of the development has been amended in response to issues raised.*
- *Otherwise demonstrate that issues have been appropriately addressed in the assessment.*

14.1.3 Earth Systems Recommendations 2010

The 2010 EIS Review found that the 2010 EIS Report did not meet the Director-General's Environmental Assessment Requirements, which specifically required the EIS to describe both the consultation process and the issues raised during this consultation process. The EIS was found to have described the consultation strategy implemented for the Project, but it did not adequately identify and describe the issues raised by the community during the consultation process. Therefore the Director-General's Environmental Assessment Requirements in relation to community consultation have not been met by the EIS.

As such, Earth Systems recommended that *an independent credible organisation should be engaged by the Proponent to facilitate open and transparent community consultation during the supplementary EIS process.*

14.1.4 New Regulatory Requirements

New regulatory requirements or updates to regulatory requirements following the submission of the 2010 EIS include:

- National Parks and Wildlife Amendment (Aboriginal Places and Aboriginal Objects) (DECCW 2010)

14.2 2013 EIS

Chapter 5 of the EIS Main Report details the stakeholder consultation process that was undertaken for the Wallarah 2 Project.

- Chapter 5 outlines the DGRs and where they are addressed in the report. It also provides tables indicating issues raised in consultation at both regulatory and community levels.
- During preparation of the Main EIS Report, consultation was conducted with the stakeholders identified in the DGRs, as well as other stakeholders such as service providers, local community groups and the Aboriginal community (detailed in Section 5.2 of the Main EIS Report).
- The Main EIS Report (Section 5.4.4) summarises the key concerns raised during regulatory and community consultation. These include potential air quality, noise, visual amenity, social economic, water management, transport, heritage, ecology, and subsidence impacts.
- Concerns regarding consultation with the community and understanding of the 2010 Refusal of the W2CP EIS are also noted in Table 19.
- Section 5.5 outlines the proponent's commitment to ongoing stakeholder engagement and details the mechanisms it intends to utilise to ensure effective ongoing engagement and communication with Project Stakeholders.
- Appendix D: Stakeholder Engagement provides newsletters dating from September 2011 through to 'Spring 2012', and a copy of a letter sent to residents providing information regarding the Project and how residents can contact the Proponent for further information.

14.3 Key Issues

Key findings of the review, with respect to the above requirements are summarised below:

Stakeholder Responses

An overview of the general issues raised by each stakeholder and how these are addressed in the EIS is provided in Section 5.4.4, Table 18 and 19. Table 19, however, does not indicate the level of concern attributed to each issue, or how many stakeholders indicated concern. As such it is difficult to understand the key issues of community concern.

Consultation Process

The 2007 NSW Government Guidelines for Major Project Community Consultation states that 'a project proponent [should choose] engagement techniques that offer opportunities to participate across all relevant groups'. Whilst it appears that all major groups and special interest groups have been consulted, it appears that much of the consultation has been conducted in a passive manner, with an emphasis upon the distribution of newsletters.

Monitoring and Reporting

It is unclear how performance on community engagement will be monitored, however, it is stated that an annual report made available to the public will detail annual performance in consultation and other environmental and social concerns.

Ongoing Consultation

On behalf of the project proponent, the EIS makes a commitment to ongoing stakeholder engagement throughout the project life cycle. This does not, however, detail a proposed schedule of consultation within which mechanisms for engagement will be conducted.

A Stakeholder Engagement Plan has not been developed for the Project.

Grievance Procedure

The development of a grievance procedure / complaints-handling procedure is considered to be international best practice for a mine operation (IFC 2009). There is no evidence of the establishment of a grievance procedure or complaints-handling procedure to manage public complaints.

Director General's Requirements

The Director General's Requirements require that the report describes the issues raised by stakeholders during the consultation process. The Main EIS Report outlines a detailed list of stakeholder issues, however provides no detail to indicate the number of stakeholders who raised a particular issue or the subsequent level of concern. As such, the DGR is not adequately addressed.

Further, the DGRs detail that it must be identified where the design of the development has been amended in response to issues raised during consultation. The report gives an indication as to which sections outline relevant strategies to manage issues raised, however does not provide a detailed description of the community concern and how it will be managed. Mitigation and management measures were consistently found to be poorly articulated throughout the Main EIS Report. Specific management measures to be undertaken not adequately provided and as such it is likely that the mitigation of community issues is not adequately addressed.

Stakeholder comments such as those of the ATOAC who feel as if the Social Impact Assessment is not conducted to an adequate level (Appendix S) have not been considered by the Main EIS Report in great detail. Section 5.6.5 mentions that the ATOAC have expressed concern, however the specific concerns are not outlined in the Main EIS Report.

Regulatory Requirements

The National Parks and Wildlife Amendment (Aboriginal Places and Aboriginal Objects) revised in 2010 outlines that a specific process of community consultation with relevant aboriginal parties must be undertaken before a person makes an application for an Aboriginal heritage impact permit.

Whilst no evidence is provided, it is stated in Chapter 5 of the EIS Main Report that the requirements outlined in the updated legislation were followed for all Aboriginal Cultural Heritage consultation that occurred from 2011 onwards.

14.4 Conclusions and Recommendations

In general, community engagement and consultation has been conducted with a variety of stakeholders, ranging from community groups to regulatory institutions. The consultation conducted however is not described in great detail, and consultation appears to have been conducted utilising a primarily passive approach, with the distribution of Project newsletters a prominent method of engagement.

The issues raised during community consultation have been listed, however, the strength of the concern, or how vocal the community was about a particular issue is not provided. Key concerns are not noted in terms of their priority to the community.

Whilst the EIS states that the proponent is committed to continuing its stakeholder engagement program throughout the life of the project, a structured Stakeholder Engagement Plan has not been developed to



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outline ongoing strategies for consultation and detailing solid commitments to consultation, including consultation schedules and grievance procedure / complaints handling procedures.

15 Prioritised Measures to Address Areas of Uncertainty

The following table outlines recommendations to address areas where information is unclear or uncertainty to fully assess impacts. The measures provided below are intended for consideration by approving authorities.

Table 15.1 Guidance for Further Assessment / Validation and Monitoring

ITEM / AREA OF UNCERTAINTY	IMPORTANCE (Low, Medium and High)	MEASURES
Air Quality	High	Air quality impacts are assessed utilising relevant methodologies to ensure that detailed impact assessments of project phases are conducted effectively.
Greenhouse Gas	Medium	A more realistic assessment of greenhouse gas (GHG) impacts is provided by including Scope 2 and 3 emissions sources in the analysis of the GHG impacts and updating impacts of the Project on anthropogenic global warming.
Water Quality	High	Surface water quality is investigated further to ensure that all sources of contaminants are identified and that water sources are effectively monitored for changes associated with the Project. A geochemical assessment for potential AMD / salinity is conducted, including development of contingency plans for the management and treatment of the Mine Operations Dam.
EPBC Water Amendment	High	The EPBC Act Water Trigger Amendment (2013) is considered by the Proponent.
Ecology	Medium	Further detailed surveys for biodiversity are conducted, including extended flora survey to establish a robust flora baseline for the Subsidence Impact Limit. The Biodiversity Offset Strategy for threatened species is revised to ensure it addresses the current Policy and that currently proposed offsets for fauna habitats are reviewed for suitability.
Mine Design and Layout	Medium	Internal haulage routes are confirmed to allow assessment of potential impacts of heavy vehicle movement.
Stakeholder Engagement	High	A robust Stakeholder Engagement Plan is developed that is inclusive of commitments to ongoing consultation and a structured grievance procedure.
Rehabilitation and Closure	High	A comprehensive Rehabilitation and Closure Plan is prepared.
Risk Assessment	Medium	The Risk Assessment and Cost Benefit Analysis are

ITEM / AREA OF UNCERTAINTY	IMPORTANCE (Low, Medium and High)	MEASURES
and Cost Benefit Analysis		reviewed and revised based on detailed findings of further recommended work.
Disaster Risk Management	High	A Disaster Risk Management Plan is developed to cover natural and human-induced emergencies associated with the Project. This Plan should be inclusive of specific Contingency Plans to manage particular events, including the management / treatment of the Mine Operations Dam (MOD) and spontaneous combustion.
Community Health and Safety	Medium	<p>The Community Health and Safety assessment is reviewed and revised based on the findings of the further work recommended.</p> <p>Potential impacts upon the Buttonderry Waste Management Facility associated with the development of the Project are fully considered.</p>
Management, Monitoring and Reporting	High	<p>Management and Monitoring Plans are prepared for each aspect of assessment prior to commencement of the Construction phase to clearly outline how impacts will be mitigated and managed.</p> <p>An independent expert is commissioned by the Proponent to conduct Environmental Audits of the project on a regular basis throughout the project life cycle.</p> <p>An Environmental Management System based on ISO14001:2004 'Environmental management systems -- Requirements with guidance for use' is developed and implemented for the Project.</p>

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Walarah 2 Coal Project

Wyong, NSW, Australia

Review of Response to Submissions to the Wyong Shire Council 2013 EIS Review

Prepared for



By



November 2013



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Executive Summary

Earth Systems was engaged by Wyong Shire Council to review the *Response to Submissions* (2013) provided by Wyong Areas Coal Joint Venture with respect to the findings and recommendations raised by Earth System in its review of the Wallarah 2 Coal Project 2013 EIS.

In the review of the 2013 EIS, Earth Systems concluded that the approach to the EIS deviated from standard practices (i.e. baseline assessment; impact assessment for construction, operations and closure; management and mitigation measures; residual impacts; and monitoring and reporting). In many cases, baseline conditions were inadequately addressed, impact assessments were underdeveloped and management and mitigation measures commonly pointed to management plans that would be developed in the future. These conclusions, in addition to specific data gaps for many components assessed in the EIS, were provided to WACJV in June 2013.

While the WACJV *Response to Submission* (RTS) acknowledged and responded to each of the issues identified in the 2013 EIS Review, many of the responses were inadequate and do not articulate measures to rectify the gaps identified in the EIS. These gaps render it impossible to determine residual impacts, particularly for the following:

- Air quality (construction and operations phases);
- Groundwater quality;
- Surface water quality for the controlled discharge point on the tributary to Wallarah Creek;
- Acid and metalliferous drainage (AMD); and
- Post-closure water quality, landform stability, visual amenity, etc.

The management and monitoring detail required to properly determine how impacts will be managed is still not provided, which leads to further uncertainty in the prediction of residual impacts.

Residual impacts are anticipated for air quality, however the extent of those impacts cannot be determined based on information from the EIS and *Response To Submission*. Residual impacts for water quality, noise and vibration, terrestrial habitat, and other criteria assessed cannot be adequately estimated without provision of the management measures that have been proposed for future management plans.



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1 Introduction

Earth Systems was commissioned in November 2013 by the Wyong Shire Council (WSC) to review the Wallarah 2 Coal Project Response to Submissions (RTS) in relation to the Earth Systems' review of the 2013 Environmental Impact Statement (EIS) and provision of recommendations.

The Wyong Areas Coal Joint Venture (WACJV) proposes to develop an underground coalmine known as the Wallarah 2 Coal Project (W2CP) (the Project), which would extract coal from beneath the Dooralong and Yarramalong Valleys in Wyong Shire, New South Wales using longwall mining techniques.

A chronology of the application process of the Project to date is summarised in Table 1-1.

Table 1-1. Summary of the Wallarah 2 Coal Project Application Process.

Date	Outcome
2010	Environmental Assessment (2010; referred to as the 2010 EIS) is submitted to the Director-General of the NSW Department of Planning (DoP) for assessment and approval under Part 3A of the NSW <i>Environmental Planning and Assessment Act 1979</i> (EP&A Act) and placed on public exhibition from 31 March to 2 June 2010.
March 2011	Development application for the Project is refused by the Minister for Planning due to: <ul style="list-style-type: none"> • Uncertainty around subsidence; • Inadequate characterization of potential impacts to surface water quality, ecology (particularly in the western portion of site), cultural heritage; and • The Project was not considered to be consistent with the principles of sustainable development.
November 2011	WACJV lodges a new application for development consent of a mining lease.
January 2012	NSW Government issues new Director General's Requirements (DGRs) for the Project ('New DGRs') to supplement DGRs issued in 2009. The new DRGs outline issues requiring comprehensive evaluation during the environmental assessment for Project approval.
July 2012	NSW Government issues supplementary DGRs to focus on the assessment of potential Project-related impacts on biodiversity, reinforcing Project obligations under the Environmental Protection and Biodiversity Conservation Act 1999 and the Environmental Protection and Biodiversity Conservation Regulations 2000.
April 2013	WACJV prepares a second Draft EIS (herein the 2013 EIS) to meet the regulatory requirements of EIS in NSW, address issues identified in the 2010 EIS refusal and meet the original and supplementary Director General Requirements.
April 2013	Draft EIS is placed on public exhibition from 26 April 2013 to 21 June 2013.
September 2013	Hansen Bailey on behalf of WACJV prepares a Response to Submissions document (RTS) responding to 748 submissions received during the public exhibition of the 2013 EIS.
October 2013	Hansen Bailey on behalf of WACJV prepares a subsequent Residual Matters Report.

WSC has engaged Earth Systems to review Hansen Bailey's responses on behalf of WACJV to the issues and recommendations identified by Earth Systems in its review of the 2013 EIA. As such, the objectives of this Report are to:

- Determine if the responses provided in the RTS adequately address issues and concerns raised by Earth Systems' review of the 2013 EIS;
- Indicate if the recommendations provided by Earth Systems in its review of the 2013 EIS were considered and addressed in the response; and

- Identify any other areas of uncertainty and or where further investigations and assessments are required prior to Project determination and/or during the construction, operation and closure stages of the Project.

1.1 Project Overview

The Project is located approximately 9 km to the northwest of Wyong township in New South Wales (refer to Figure 1-1). The proposed mining area is located within the declared Wyong Mine Subsidence District and the Hue Hue Mine Subsidence District, which together extend west of the F3 Sydney – Newcastle Freeway.



Figure 1-1 Project Location (Source: Hansen Bailey, 2013a)

Two primary surface facilities are proposed for the Project. The main coal handling and rail loading facility are referred to as the Tooheys Road Site and would be located adjacent the northeast corner of the F3 Freeway and the Motorway Link Road intersection. The Buttonderry Site would include ventilation shafts, office and employee facilities and be located to the south of the Buttonderry Waste Disposal Facility off Hue Hue Road. The majority of the underground extraction area lies beneath the Yarramalong and Dooralong Valleys and Wyong State Forest.

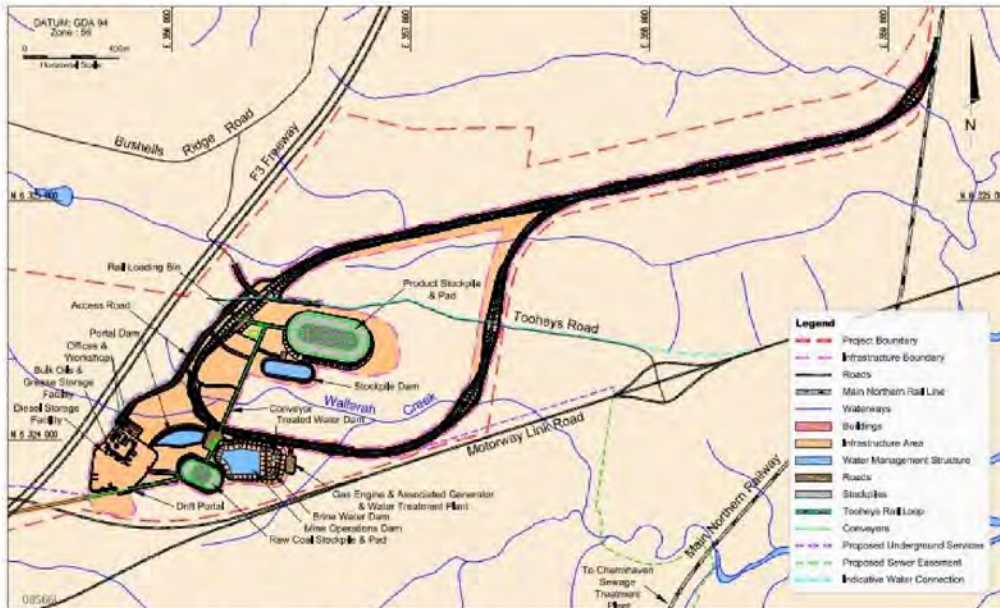


Figure 1-2 Tooheys Road Site (Source: Hansen Bailey, 2013a)



Figure 1-3 Buttonderry Site (Hansen Bailey, 2013a)

WACJV proposes to extract of up to 5 million tonnes per annum of run-of-mine (ROM) coal from the Wallarah-Great Northern Coal Seam for a period of 42 years using longwall mining methods. The Project is described in full in Chapter 3 of the 2013 EIS.

Key land uses within the Project Application Area range from light industrial, commercial and housing developments to small townships and small farms (Figure 1-4). The Tooheys Road Site is located between the F3 Freeway and an active clay quarry and tile factory. The Buttonderry Site is situated adjacent to the Wyong Employment Zone (WEZ) and the Buttonderry Waste Management Facility. The proposed Warnervale Town Centre (WTC) is located southeast of the Project sites while the Blue Haven residential area is located approximately 3 km to the north east of the Tooheys Road Site. A sewage treatment plant is located approximately 2 km to the south east of the Tooheys Road Site

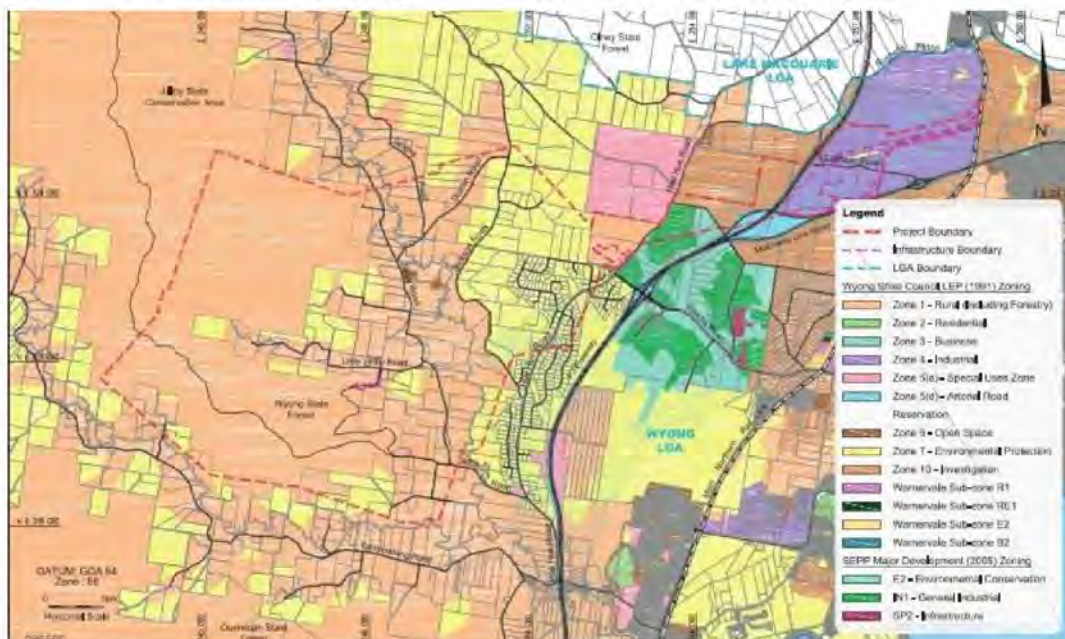


Figure 1-4 Surface Facilities and Surrounding Land Uses (Source: Hansen Bailey, 2013a)

The Jilliby State Conservation Area and Wyong State Forest are located to the west of the Project area. Jilliby Creek flows to the southeast before merging with the Wyong River which feeds Tuggerah Lake. Wallarah Creek flows through the Tooheys Road Site to Budgewoi Lake.

Major transport routes near the Project area include the F3 Freeway, Motorway Link Road and the Main Northern Railway Line.

2 Methodology

This Report was undertaken to review and evaluate the adequacy of the responses and information presented in the *Response to Submissions* (2013) as they pertain to the findings and recommendations provided by Earth Systems in its review of the 2013 EIS. To ensure a comprehensive review, Earth Systems undertook the following steps:

1. Review of the responses in the RTS (2013) against the Review of 2013 EIS conducted by Earth Systems (June 2013);
2. Determine if the findings were addressed;
3. Assess the suitability and comprehensiveness of the response against each finding identified and recommendations provided by Earth Systems in the Review of the 2013 EIS; and
4. Summarise key findings from this Report.

2.1.1 Literature Review

The following documents were reviewed during the preparation of this Report:

- *Walarah 2 Coal Project Response to Submissions (2013)*;
- *Walarah 2 Coal Project Residual Matters Report (2013)*;
- *Walarah 2 Coal Project Review of the 2013 EIS (2013)*;
- *Walarah 2 Coal Project Environmental Assessment: Volumes 1 to 6 (2013)* and technical appendices;
- *Walarah 2 Coal Project Environmental Assessment: Volumes 1 to 4 (2010)* and technical appendices;
- *Director-General's Environmental Assessment Requirements (January 2012) and Supplement to the Director-General's Requirements (July 2012)*;
- All relevant Federal and State legislation, policies and plans; and
- Relevant environmental, sustainability and environmental impact assessment (EIA) standards and best practice guidelines.

3 Review

3.1 Review of RTS

An analysis of the suitability and quality of the proponent's responses to the findings, queries and recommendations identified by Earth Systems are presented in Table 3-1. The review is structured according to the 13 findings highlighted in the Executive Summary and the 12 recommendations provided in the *Review of the 2013 EIS* (Earth Systems, 2013).



Table 3-1. Review of WACJV's response to issues identified by Earth Systems in the 2013 EIS.

Findings of EIS Review	Finding number	Earth Systems Finding	Finding Addressed	WACJV Response	WACJV Reference (Response to Submissions, 2013)	Assessment of Response
Structure and Approach	1	EIS does not adequately assess construction impacts; in particular related to air quality, water quality and transport.	No, air quality and water quality impacts are further commented on, but the deficiencies are not addressed.	<p><u>Air Quality:</u></p> <p>"Section 7.1 of the AQGGA provided detailed dust emission estimates for a construction phase scenario. The estimated dust emissions during construction were found to be significantly lower (approximately 50% lower) than the estimated dust emissions during the operational phase." "Section 8 of the AQGGA demonstrated that the Project will comply with the air quality impact assessment criteria at all locations during the operational phase. Due to the lower emissions during the construction phase, it can be concluded that the construction phase of the Project would also comply with the air quality criteria under all modelled climatic conditions."</p> <p><u>Water Quality:</u></p> <p>"The water balance model is configured to represent the changing characteristics of the water management system over the 28 year Project life, including the construction period. The construction period represents the first three years of the Project life, which has been simulated in the water balance model."</p> <p>"There are predicted to be overflows from the Entrance Dam at the Buttonderry Site during the construction period ranging from 0 ML/year (during an extremely dry year) to approximately 65 ML/year (during an extremely wet year). Since there is no coal handling at the Buttonderry Site, the primary potential pollutant will be suspended sediment. The runoff will be suitable for release after treatment of sediment within the Entrance Dam. The proposed erosion and sediment controls are described in Section 6.3 of the SWIA. There is no coal handling at the Tooheys Road Site during Year 1. Groundwater inflows to the underground commence in Year 2 of the Project,</p>	Section 3.5.1, 3.3.6, 3.11.7, 3.11.8	<p>The response provides no justification as to why construction impacts were not clearly separated from operations impacts and fails to articulate the extent of construction impacts for most parameters.</p> <p><u>Air Quality</u></p> <p>The air quality impact assessment is fundamentally flawed and air quality exceedences are anticipated during operations, thus the assumption that construction impacts will necessarily be compliant with emissions criteria cannot be justified with certainty.</p> <p>Ambient conditions for 24-hour PM₁₀ often exceed criteria in the region (>16% if measured days), thus air quality impact criteria during both construction and operations will exceed air quality criteria under various meteorological conditions.</p> <p>Emission factors for the construction phase were taken from USEPA (1995) and NERDDC (1998) instead of the more up-to-date and Australian emission factors, available from the National Pollutant Inventory (NPI) Emission Estimation Technique Manual for Mining (2012).</p> <p><u>Water Quality</u></p> <p>Construction phase impacts are not addressed. The justification in the Response to Submission points to erosion and sediment control planning that relies on the completion of various components of Project construction (e.g. sediment dams). No controls are recommended for minimising erosion and sediment control at the outset of construction and potential impacts from hydrocarbons and other construction phase water quality are not considered, nor are management measures provided.</p>



Findings of EIS Review	Finding number	Earth Systems Finding	Finding Addressed	WACJV Response	WACJV Reference (Response to Submissions, 2013)	Assessment of Response
				<i>corresponding with the construction of the required drift. The volumes of groundwater inflows are shown in Section 5.7 of the SWIA. The WTP will be operating from the end of Year 1 of the Project to treat any groundwater inflows and any rainfall runoff, with excess treated water to be discharged to Wallarah Creek in accordance with the water management strategy and the conditions of an EPL."</i>		
	1	<i>EIS does not adequately consider closure planning and no assessment of potential closure impacts has been undertaken.</i>	No , a commitment to prepare a closure plan has been made; however, the lack of closure planning within the body of the report leads to uncertainty in the assessment of impacts.	<i>"Further detail on rehabilitation objectives to ensure a safe, stable and non-polluting final landform will be included in a Rehabilitation and Closure Plan for the Project to be developed in consultation with relevant regulators. It shall include information on relevant domains and discuss final landuse, rehabilitation objectives, domain objectives, completion criteria and rehabilitation monitoring. The timing of the preparation of the plan will be consistent with any conditions of Development Consent."</i>	Section 3.22	Although it is recognized that WACJV intends to develop a Rehabilitation and Closure Plan , no indication in the response is provided with respect to the approach to closure planning, impact assessment and post-closure risk mitigation.
	2	<i>The risk assessment and cost benefit analysis need to be re-rated based on the remaining knowledge gaps and uncertainties and the findings of further recommended studies.</i>	No , the risk assessment and cost benefit analysis has not been re-rated.	<i>"The BCA of the Project was based on the best available information about the Project, including information from a range of specialist assessments predicting the likely environmental, social and cultural impacts. The Economic Impact Assessment considered reasonable worst-case assumptions for the purposes of the impact assessment including the BCA...This analysis indicated that the results of the BCA were not sensitive to reasonable changes in the assumptions for any of these variables. In particular, significant increases in the values used for impacts of greenhouse gas emissions, agricultural impacts and forestry impacts had little impact on the overall economic desirability of the Project."</i> <i>"Chapter 6 of the EIS provides a summary of Appendix F of the EIS which provides a detailed Revised Risk Assessment of the potential known Project risks in accordance with the WACJV Risk Assessment Matrix. The risk assessment was</i>	Section 3.17.2, 3.27.18	Since submission of the 2013 EIS additional investigations have been undertaken and additional mitigation measures derived (refer to Table 11, Response to Submissions, 2013) which are not captured in the revised risk assessment.



Findings of EIS Review	Finding number	Earth Systems Finding	Finding Addressed	WACJV Response	WACJV Reference (Response to Submissions, 2013)	Assessment of Response
				<i>undertaken in accordance with the DGRs which required they identified the key issues for further assessment."</i>		
	3	<i>Lack of Environmental Management System or a commitment to develop one.</i>	Partially addressed. A description of Environmental Management System was not provided, however an indication to develop one was included.	<i>"WACJV will develop and implement an Environmental Management System in consultation with the relevant regulators (and the Aboriginal community where relevant) consistent with Section 7 of this EIS to the approval of DP&I which shall comprise (at least)" 17 strategies / plans.</i>	Section 3.25, Table 11 of Section 4.	The response specifies the intention of WACJV to develop an Environmental Management System while Table 11 outlines the plans and strategies that would form the basis of the EMS.
	4	<i>Lack of commitment to regular independent environmental audits throughout the project life cycle. However, there is a commitment to develop an Annual Review Report to systematically assess performance and identify areas for improvement.</i>	Partially addressed. A commitment to undergo Independent Environmental Audits is stated, however no indication of regularity or frequency provided.	<i>"WACJV will commission Independent Environmental Audits in accordance with any conditions of Development Consent."</i>	Section 3.27.14, Table 11 of Section 4	Response has addressed recommendation to have independent environmental audits conducted, however no further detail is provided regarding the proposed nature of the audit, frequency, etc.
Stakeholder Engagement	5	<i>2013 EIS does not indicate that WACJV has adequately engaged with the community during the environmental assessment process and consequently limited consultation has been conducted. The EIS does not provide</i>	No. No additional information is provided to determine if stakeholders were adequately engaged or if their concerns were accurately captured and addressed in the	<i>"As described in Section 5.3 of the EIS, various methods were employed to engage with the local community including local community meetings, focus groups and telephone surveys, five newsletters, direct correspondence, creation of a community reference group and Project information days."</i>	Section 3.24.1	Although different methods of engagement were employed as stated in the response, the only examples and evidence provided to substantiate the statement was a newsletter and one example of a residential letter. No meetings minutes or other evidence from meeting are presented. Therefore, it is not possible to determine if stakeholders adequately engaged and if raised concerns were accurately captured and



Findings of EIS Review	Finding number	Earth Systems Finding	Finding Addressed	WACJV Response	WACJV Reference (Response to Submissions, 2013)	Assessment of Response
		<i>sufficient information on the concerns raised by the community during consultation.</i>	EIS.			addressed.
Water	6	<i>EIS does not assess impacts on surface water quality or provide potential management and mitigation measures including a contingency planning for uncontrolled discharge.</i>	No. Impacts on surface water quality have not been assessed.	<p><i>"There are predicted to be overflows from the Entrance Dam at the Buttonderry Site during the construction period ranging from 0 ML/year (during an extremely dry year) to approximately 65 ML/year (during an extremely wet year). Since there is no coal handling at the Buttonderry Site, the primary potential pollutant will be suspended sediment. The runoff will be suitable for release after treatment of sediment within the Entrance Dam. The proposed erosion and sediment controls are described in Section 6.3 of the SWIA."</i></p> <p><i>"As described in Section 5.3.1 of the SWIA, the mine water management system has been designed to ensure that there are no uncontrolled discharges (overflows) from the mine water storages (Portal Dam, Stockpile Dam and Mine Operations Dam) to the receiving environment under all historical climatic conditions."</i></p> <p><i>"It is possible that an event greater than the design capacity of the mine water storage dams could occur and potentially cause uncontrolled discharges to Wallarah Creek. During such an extreme weather event, it is likely that Wallarah Creek would be in flood and any uncontrolled discharges from the mine water storages would be significantly diluted by flood flows in the receiving water."</i></p>	Section 3.3.1, 3.3.6	<p>While suspended sediment will likely be the primary water quality pollutant during construction, it is one of a number of potential pollutants that require management (e.g. hydrocarbons, acid and metalliferous drainage, etc.).</p> <p>Although the mine water management system has been designed to ensure no uncontrolled discharges, the RTS admits the possibility of an uncontrolled discharge to occur in an extreme event, however no mitigation measures or contingency are provided.</p> <p>Furthermore, inferring that impacts to Wallarah Creek will be minimised because flood conditions and dilution are assumed to reduce impacts, there is no further investigation to support this assumption. Dilution is also not an adequate means of reducing impact, which depends on the nature of potential contaminants (chemical and physical), etc.</p> <p>The assumption that passive treatment for potential contaminants in the Entrance Dam will ensure discharge is of suitable quality does not consider the range of potential water quality issues that may occur.</p>
Water	7	<i>No assessment of potential acid and metalliferous drainage (AMD)</i>	No. No assessment of AMD has been conducted.	<i>"The Newcastle Coal Measures are not associated with marine incursions. As a result the coal seams and the surrounding sediments do not contain significant concentrations of sulphide minerals. Sulphur content of Newcastle Coal Measure coals is significantly lower than sulphur levels recorded in Greta coals. Analysed</i>	Section 3.23.3	<p>The 2013 EIS Appendix C Geology Report or RTS do not indicate that a geochemical analysis was undertaken to test for AMD, rather a desktop analysis was relied upon.</p> <p>However, the Soils and Land Capability Impact</p>



Findings of EIS Review	Finding number	Earth Systems Finding	Finding Addressed	WACJV Response	WACJV Reference (Response to Submissions, 2013)	Assessment of Response
				<i>values are typically less than 0.3%. There are no recorded events of AMD issues associated with contamination of water which has emanated from mines operating in the Newcastle Coal Measures."</i>		Assessment (EIS 2013) found the "potential of acid sulphate soils (ASS) and potential acid sulphate soils (PASS) to occur in the south of the Project Boundary along the lower reaches of the Jilliby Creek and Little Jilliby Creek, and along the unnamed waterway adjacent to western boundary of the Buttonderry Site" (page 8). Furthermore, the report states that "any activities in sections of the Project Boundary within or close to these areas (e.g. construction and final rehabilitation of the Buttonderry Sites...800 meters from an area with a potential for ASS and PASS to be present) should take into account the potential presence of ASS and PASS and ensure such soils are appropriately assessed and managed." (Page 8, EIS 2013). ASS are soils that typically contain significant concentrations of pyrite. When exposed to oxygen coupled with sufficient moisture, they oxidise and result in sulphuric acid generation.
Water	8	<i>Lack of immediate downstream sampling point of proposed Wallarah Creek tributary discharge site.</i>	No. A WTP monitoring point will be located at the release point; however this will not provide baseline data for basis of comparison.	<i>"Section 6.4 of the SWIA details the existing and proposed surface water monitoring program for the Project. Table 6.3 in the SWIA shows that the [Water Treatment Point] WTP monitoring point will be located at the release point from the WTP. The existing Wallarah Creek surface water monitoring locations W6 and W12 are located on Wallarah Creek downstream and upstream of the discharge location respectively and will continue to be utilised during operations."</i>	Section 3.3.3	Although the WTP monitoring point will be located at the release point from the WTP as part of the monitoring program, baseline conditions at the discharge point have not been captured and therefore will not provide a baseline comparison of impacts including cumulative impacts. Furthermore, no indication is provided of when the WTP release sampling point will be installed. If it is installed after Project activities commence (e.g. construction, operations) begin, it will not be possible to distinguish between existing baseline conditions (prior to project activities and potential Project impacts/influences) and Project impacts.
Water	9	<i>Lack of contingency for potential overflow of untreated mine water from the Mine Operations Dam</i>	No. No contingency plan is provided.	<i>"The mine water management system has been designed to ensure that there are no uncontrolled discharges (overflows) from the mine water storages (Portal Dam, Stockpile Dam and Mine Operations Dam) to the receiving environment under all historical</i>	Section 3.3.1	Response does not directly address concerns regarding potential overflow of the MOD specifically, such as reference to a design criteria of MOD and mitigation measures to prevent overflow. Although the mine water management system has



Findings of EIS Review	Finding number	Earth Systems Finding	Finding Addressed	WACJV Response	WACJV Reference (Response to Submissions, 2013)	Assessment of Response
		(MOD).		<p><i>climatic conditions...The discharge of untreated mine water is not part of the water management system design for the Project. As mentioned above, the mine water management system has been designed to avoid uncontrolled discharges to the receiving environment from mine water storages for all historical climatic conditions.</i></p> <p><i>"Detailed design of mine water dams will be undertaken in the detailed design stage of the Project, following the granting of the relevant approvals."</i></p>		<p>been designed to ensure no uncontrolled discharges, the RTS admits the possibility of an uncontrolled discharge to occur in an extreme event, however no mitigation measures are provided and no contingency plan proposed.</p> <p>Furthermore, the detailed design of mine water dams should be undertaken in conjunction with the EIS and finalized before obtaining environmental approvals in order to adequately categorize residual impacts following mitigation measures considered in the design criteria.</p>
Water	10	<i>Insufficient groundwater parameters measured during baseline (i.e. only pH, conductivity and TDS were measured).</i>	No. There is no justification or indication for the limited parameters measured.	<p><i>"It is acknowledged that baseline groundwater monitoring was fragmented, with water level, salinity and pH being monitored from 1999 to 2001 at many of the piezometers installed in the alluvial lands. Subsequently, access to these piezometers was not possible. However, it is important to note that the available data supports a quasi-steady state system for the important alluvial lands aquifer where the water table fluctuates over a predictable range in response to rainfall. Ionic speciation was also conducted on water samples collected on at least five occasions during 1998-1999...groundwater quality is not predicted to change as a result of the Project."</i></p>	Section 3.2.5	<p>The response does not state a rationale for only conducting a limited range of parameters and does not indicate an intention to implement a more comprehensive monitoring program.</p> <p>Furthermore, it indicates that data collected from relevant piezometers was only over a course of 2 years collected more than 10 years ago. As a result referenced parameters may not adequately represent current groundwater properties in the Project Area.</p>
Water	11	<i>Limited groundwater mitigation measures presented requiring better articulation of groundwater quality mitigation.</i>	No. No groundwater mitigation measures developed.	<p><i>"...Should future (rigorous) monitoring of the aquifer system identify deterioration in water quality that can be attributed to the Project, mitigation measures may include localised rerouting of rainfall runoff to enhance aquifer recharge or changes to the mine plan. Measures to mitigate impacts on groundwater quality will be detailed in the Water Management Plan."</i></p>	Section 3.2.5	<p>The response does not adequately articulate mitigation measures for potential groundwater impacts nor does it adequately address the need for a more rigorous monitoring protocol to identify potential impacts.</p>
Water	12	<i>EPBC Act 'Water Trigger' Amendment (2013) has not been</i>	Yes. The RTS indicates a pending decision regarding application of the	<p><i>"The EPBC Act Water Trigger Amendment 2013 was passed by parliament on 19 June 2013. The Minister has 60 days from the commencement of the Bill to decide whether the Project requires approval in</i></p>	Section 3.28.6	<p>60 days from June 19 is August 17. It would be expected that a decision would have been made prior to submission of the RTS; however this is not</p>



Findings of EIS Review	Finding number	Earth Systems Finding	Finding Addressed	WACJV Response	WACJV Reference (Response to Submissions, 2013)	Assessment of Response
		<i>considered.</i>	water trigger to the Project.	<i>relation to the new water trigger. In its submission, SEWPaC indicated that a decision on whether the water trigger applies to the Project was still pending."</i>		discussed in the RTS.
Air Quality	13	<p><i>The methodology for air quality impact assessment was not undertaken in a manner consistent with applicable legislation (DECC, 2005). Detailed modelling includes only Project emissions rather than Project emissions with baseline conditions. This provides a misleading assessment of likely dust levels that will be experienced by surrounding communities.</i></p> <p><i>Construction impacts and impacts associated with certain climatic conditions are not clearly outlined.</i></p>	No. The assertion that the modelling was conducted according to the <i>Approved Methods</i> is not accurate; therefore the fundamental issue was not addressed.	<i>"The AQGA was completed in accordance with the Approved Methods for Modelling and Assessment of Air Pollutants in NSW (DECC, 2005) (the Approved Methods). The submission from EPA confirmed that the air quality assessment was conducted in accordance with the Approved Methods. The Approved Methods is not legislation but rather a guideline for the completion of air quality assessments in NSW. "</i>	Section 3.5.2	<p>The Approved Methods for Modelling and Assessment of Air Pollutants in NSW (DECC, 2005) lists the statutory methods for modelling and assessing emissions of air pollutants from stationary sources in the state. It is referred to in Part 4: Emission of Air Impurities from Activities and Plant in the Protection of the Environment Operations (Clean Air) Regulation 2002 (the 'Regulation'). Industry has an obligation to ensure compliance with the requirements specified in the Regulation."</p> <p>The modelling for predicted impacts (Sections 8.1 – 8.7 of the EIS) and associated contour plots consider emissions from Project-related operations alone. Predicted impacts from the Project must be summed with respective background concentrations to determine total impact for each parameter and averaging period. Instead, the impact assessment compares predicted emissions from Project operations alone against the impact criteria, giving the impression that concentrations of applicable parameters will be compliant with impact criteria. As ambient conditions exceed guidelines on occasion, exceedences will occur, which will be exacerbated with Project emissions.</p> <p>Maximum daily PM₁₀ used a Monte Carlo statistical simulation to randomly select values, rather than use maximum available PM₁₀. While there may be merit in using a statistical approach, <i>The Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales</i> (DECC, 2005) specifies the use of maximum measured volumes in cases where measurements were not taken often enough to include them in the model, and advises consulting Air Technical Advisory Services Unit of the DECC</p>



Findings of EIS Review	Finding number	Earth Systems Finding	Finding Addressed	WACJV Response	WACJV Reference (Response to Submissions, 2013)	Assessment of Response
						otherwise. A cumulative impact assessment should capture total impacts (background concentration summed with predicted Project-related inputs) combined with anticipated future development. The cumulative impact assessment does not adequately consider the combined effects of Project emissions, future development (e.g. Wamervale Town Centre construction) and ambient conditions
Air Quality	14	<i>Predicted Project-related emission concentrations from dispersion modelling assume Project implementation of best practices. These estimates are only relevant provided these controls are implemented. It is unclear whether the EIS commits the Project to these management and mitigation measures.</i>	No. No clear explanation provided.	<p><i>"WACJV has committed to the implementation of all best practice dust management measures outlined in the AQGGA. Full details of dust management measures will be provided in an Air Quality Management Plan (AQMP), which the proponent will prepare in accordance with the conditions of the development consent for the Project. The AQMP will describe all best practice dust control and monitoring measures to be implemented, including the measures required by the EPA. All measures will be quantifiable, auditable, measurable and enforceable. The AQMP will include Key Performance Indicators (KPIs) for determining compliance with the plan and conditions of development consent. Although considered an unlikely occurrence due to the anticipated high moisture content of the Project's resource, should spontaneous combustion be determined to be a risk in the future, it shall be considered in the AQMP with relevant management and mitigation measures incorporated to the approval of relevant regulators."</i></p> <p><i>"As outlined in Section 11.3 of the AQGGA, the existing monitoring network will be updated or augmented with a number of continuous PM₁₀ / PM_{2.5} monitoring instruments. These will provide near real-time data on dust levels in the local community. Full details and locations of monitors will be outlined in the AQMP."</i></p> <p><i>"Continuous monitoring stations are not intended to be</i></p>	Section 3.5.5, 3.5.6	<p>The proponent has committed to developing an Air Quality Management Plan (AQMP). The AQMP has not been included in the EIS.</p> <p>The future AQMP will provide an (undisclosed) number of PM₁₀/PM_{2.5} particulate monitors. There is no commitment for ambient air gases or odour monitoring from the potentially odorous ventilation stack.</p> <p>It is accepted that the rail corridor is used by all train movements, though a monitor between the corridor receptors and site may prove beneficial.</p>



Findings of EIS Review	Finding number	Earth Systems Finding	Finding Addressed	WACJV Response	WACJV Reference (Response to Submissions, 2013)	Assessment of Response
				established along the rail corridor as suggested in some submissions. Such monitoring is not considered necessary since recent studies have determined that fugitive emissions are not a significant concern. In any event, dust levels within the rail corridor are the result of all train movements. Should it be required it would therefore be more appropriate for monitoring to be undertaken by the appropriate rail authority or government agencies, rather than an individual rail transport customer"		
Greenhouse Gas	15	Greenhouse gas emission mitigation strategies are very brief and do not demonstrate a sufficient level of commitment by the Proponent to reduce emissions and does not adequately address the terms listed in the Director-General's Environmental Assessment Requirements and the Supplementary Director-General's Requirements.	Partial. Commitments not thoroughly described.	<p>"Greenhouse gas mitigation measures are outlined in Section 10.6 of the AQGGA. Additional detail on GHG mitigation measures will be provided in the AQMP, which would be required as a condition of development consent. As stated in Section 7.6.4 of the EIS, WACJV will also develop an Energy and Greenhouse Strategy within 2 years of the commencement of longwall mining.</p> <p>Although the submission notes that the list of mitigation measures is brief, the proposed mitigation measures are significant in terms of GHG savings. For example, the proposed methane capture and utilisation has the potential to achieve a GHG reduction of more than 50% through flaring; with additional reductions achieved through the beneficial re-use of methane for on-site power generation (if feasible)."</p>	Section 3.6.4	<p>A commitment has been shown to provide Greenhouse Gas mitigation measures in a future Air Quality Management Plan (AQMP). An AQMP has not been included as part of the EIS.</p> <p>WACJV should clarify the wording/timing of the Energy and Greenhouse Strategy, as to whether "within" refers to 2 years prior to or after commencement of longwall mining. And the timing of anticipated greenhouse mitigation measures contained within the Strategy.</p>
Noise and Vibration	16	It is unclear whether the control measures identified in the Noise and Vibration specialist study are Project commitments or recommended best practices. The results of noise modelling are	Partially addressed.	"The Noise and Vibration Impact Assessment (Appendix N of the EIS) for the proposed development predicts that there will be no change in the LAmax noise level and only a marginal change in the LAeq, 24Hr noise level in the vicinity of the rail line. Using the guidance provided in the 'WHO Methodological Guidance for estimating the burden of disease from environmental noise'(WHO, 2012) this marginal change will result in less than a 1% increase in sleep	Section 3.8.1	The Noise study noted that coal maybe transported by road when regular train freight is not available. This represents a potential "worst-case" emission scenario for both noise impacts and air quality impacts to the community



Findings of EIS Review	Finding number	Earth Systems Finding	Finding Addressed	WACJV Response	WACJV Reference (Response to Submissions, 2013)	Assessment of Response
		<i>only valid if the recommended attenuation measures are committed to and implemented.</i>		<p>disturbance of the population in the immediate vicinity of the rail line."</p> <p>"Section 7.8.3 of the EIS identifies that noise modelling for a peak annual production output of 5 Mtpa shows that the additional rail traffic noise will marginally increase (1-2 dBA) the existing LA rail traffic noise levels on the Main Northern Rail Line. With respect to the LAmaxeq, 24 hour noise levels, the Project is not expected to increase the existing levels.</p> <p>The OEH LA60 dBA criteria are shown to be satisfied at approximately 70 m from the rail line. As Blue Haven is greater than 500 m from the rail loop / rail line junction, the OEH criteria is met."</p>		
Noise and Vibration	17	<i>While noise modelling indicates that construction and operational noise will not be a major issue for the Project, modelling predicted that there may be some exceedences of Project Specific Noise Criteria (PSNC). Additional mitigation measures are not identified to prevent these exceedences.</i>	No. Predicted exceedences not addressed.	<i>"As described in Section 7.8.3 of the EIS, the Project Specific Noise Criteria (PSNC) are not predicted to be exceeded at any privately owned residences during construction and operations. Mitigation measures are outlined in Section 7.8.4 of the EIS."</i>	Section 3.8.1	Mitigation measures specific to the <i>Project Specific Noise Criteria (PSNC)</i> are not addressed in the RST and therefore mitigation measures specific to these exceedences are not provided.
Ecology	18	<i>Although an overall adequate ecological baseline was provided, it lacks detail in regard to threatened species</i>	Yes, Additional flora and aquatic surveys were conducted in 2013. Although sufficiently detailed	<i>"As the majority of the quadrat data provided in the EIS was collected outside of the five year timeframe prescribed by regulatory bodies, additional flora surveys were conducted in July 2013....The July 2013</i>	Section 3.9.2, 3.9.3, 3.10	Surveys for threatened species were not conducted. The Project is assuming that threatened species occur within the Project Area as part of a conservative approach.



Findings of EIS Review	Finding number	Earth Systems Finding	Finding Addressed	WACJV Response	WACJV Reference (Response to Submissions, 2013)	Assessment of Response
		<i>population distribution and abundance estimates. Ecological surveys should have been conducted over a broader survey area to reflect impacts associated with all project components.</i>	surveys for threatened species were not conducted for flora and fauna, the Project is assuming their respective occurrence.	<p><i>surveys provided a total of 30 additional quadrats."</i></p> <p><i>"Targeted searches for the aforementioned threatened flora species within the SIL were not considered necessary due to the limited extent of disturbance. Nevertheless, the assessment has adopted a conservative approach by assuming that these threatened flora species have the potential to occur within areas of suitable habitat within the SIL. The areas of potential habitat for threatened fauna that will be cleared, subsided and offsets have been presented in Table 6.2 of the EIA."</i></p> <p><i>"It was conservatively assumed that threatened frog species occur within the Project Boundary due to the availability of suitable habitat and historical recordings...Further surveys for threatened frog species will be conducted once survey conditions are appropriate to determine areas where threatened frogs are more likely to occur and to fulfil survey effort requirements specified by regulatory agencies."</i></p> <p><i>"Any threatened species that have been historically recorded within the Project Boundary and surrounding areas were considered as likely to occur. Impacts on potentially occurring species have been assessed as if they were recorded. Potential impacts on recorded and potentially occurring threatened species have been assessed in Section 6.8 of the EIA."</i></p>		Additional surveys for threatened species would improve the existing knowledge base of their population and distribution and may lead to discovery of additional species.
Ecology	19	<i>Offsets required under the EPBC Act for threatened species identified within the Project Boundary were not calculated using the new EPBC Act Policy Guidelines of 2012.</i>	Partially addressed. No calculations of offsets for threatened species were provided in the RST to support the response.	<i>Since the exhibition of the EIS, further fieldwork has been conducted to assess the proposed Biodiversity Offset Package (BOP) under the new EPBC Act Offsets Policy's Offsets Assessment Guide. In particular, assessments were conducted for the species listed as controlled action species: namely Chamhaven Apple (<i>Angophora inopina</i>) and Black-eyed Susan (<i>Tetralochea juncea</i>), listed as Vulnerable under the EPBC Act; and Spotted-tail Quoll (<i>Dasyurus maculatus</i>) and Giant Barred Frog (<i>Mixophyes</i></i>	Table 11 of Section 4, Section 3.9.5, 3.9.9	The response does not include the calculations conducted to determine offsets or include details of the Biodiversity Offset Package. As a result it is not possible to determine the accuracy or suitability of methods used in determining offsets.



Findings of EIS Review	Finding number	Earth Systems Finding	Finding Addressed	WACJV Response	WACJV Reference (Response to Submissions, 2013)	Assessment of Response
				<p><i>iteratus), listed as Endangered under the EPBC Act.</i></p> <p><i>The results of the assessment under the Offsets Assessment Guide were provided to SEWPaC in June 2013. SEWPaC has reviewed this assessment and is satisfied with the adequacy of the proposed BOP for offsetting impacts to Matters of National Environmental Significance (MNES)."</i></p> <p><i>"Indirect offsetting measures will be required for the Giant Barred Frog. WACJV will provide indirect offsets in the form of funds for research or education programs to meet the 100% offset requirements under the EPBC Act Offsets Policy."</i></p> <p><i>"The proposed BMP will include measures for rehabilitating degraded areas and revegetating grassland areas back to native vegetation. The offset areas will be conserved in perpetuity and the quality of the native vegetation will be improved through active management. As a result, there will no net loss of biodiversity, which is consistent with the required. Maintain and Improve 'principles of the Native Vegetation Act 2003."</i></p>		
Traffic and Transport	20	A Rail Study has been conducted as part of the 2013 EIS to address the gaps in information regarding transport impacts identified in the 2010 EIS. This is a more comprehensive assessment of the transport route of the coal.	Yes.	"The DGRs relating to impacts of the rail network have been reproduced in the submission from TfNSW. These issues have been addressed in Section 3.12.2 and Section 3.12.3."	Section 3.12	Additional measures are provided for managing risks related to rail transport. Furthermore, WACJV has committed to develop a Traffic and Transport Management Plan (TTMP) to manage impacts of the Project on the traffic network.
Visual	21	The visual assessment conducted for the	Yes.	"Appendix E of the EIS provides plan and elevation drawings for the relevant infrastructure items. The	Section 3.15	No further issues identified in the review of the RTS.



Findings of EIS Review	Finding number	Earth Systems Finding	Finding Addressed	WACJV Response	WACJV Reference (Response to Submissions, 2013)	Assessment of Response
Amenity		<i>Project provides a good site analysis and identification of key viewpoints, assessment of potential visual impacts and recommendations for mitigation measures to minimise impacts of the Project.</i>		<i>Visual Impact Assessment considered these drawings in its assessment."</i>		
Archaeology and Cultural Heritage	22	<i>In general, a comprehensive survey and report of the Aboriginal cultural and historic heritage of the areas surveyed within the Project Boundary has been prepared apart from some areas with accessibility restrictions.</i>	Yes.	<i>"WACJV will continue to consult with the Aboriginal community during the construction and operation of the Project."</i>	Section 3.13.1	Continual and transparent consultation with Aboriginal communities is paramount in addressing any concerns or potential impacts are covered and should form part of the Stakeholder Engagement Strategy discussed above.
Community Health and Safety	23	<i>Uncertainties and knowledge gaps identified in Earth Systems review of the 2013 EIS including air and water quality impacts indicate that the assessment of community health and safety impacts and risks and their necessary management and mitigation measures are unlikely to be sufficiently</i>	No. Identified data gaps and uncertainties which have the potential to impact community health and safety have not been adequately addressed in the RTS as referenced throughout this report.	<i>"Walarah Creek and Bullonderry Creek are located outside of the Gosford-Wyong Water Supply Scheme catchment and are part of the Tuggerah Lakes Water Source. Therefore there are no potential impacts to the water quality of the Gosford-Wyong Water Supply Scheme due to possible overflows from the mine water management system or the proposed discharges of treated water to Wallarah Creek." "Section 7.1 of the AQGGA provided detailed dust emission estimates for a construction phase scenario. The estimated dust emissions during construction were found to be significantly lower (approximately 50% lower) than the estimated dust emissions during the operational phase...Due to the lower emissions during the construction phase, it can be concluded</i>	Section 3.3.6, 3.5.1, 3.5.5	Given the information gaps and recommendations provided in this Report, responses related to community health and safety with respect to water and air quality are not adequately addressed. Comprehensive baselines are required to establish existing water quality, air, and traffic conditions in order to assess potential impacts, develop comprehensive monitoring and management plans.



Findings of EIS Review	Finding number	Earth Systems Finding	Finding Addressed	WACJV Response	WACJV Reference (Response to Submissions, 2013)	Assessment of Response
		comprehensive.		<p>that the construction phase of the Project would also comply with the air quality criteria under all modelled climatic conditions."</p> <p>"WACJV has committed to the implementation of all best practice dust management measures outlined in the AQGGA. Full details of dust management measures will be provided in an Air Quality Management Plan (AQMP), which the proponent will prepare in accordance with the conditions of the development consent for the Project. The AQMP will describe all best practice dust control and monitoring measures to be implemented, including the measures required by the EPA."</p>		
Impacts beyond DGRs	24	Contingency plans for potential disasters, whether naturally occurring or human induced, have not been included in the EIS. This is an oversight.	No. A Disaster Risk Management Plan was not developed.	"Insufficient detail is provided to ascertain the exact nature of this submission; however it has been assumed here that it refers largely to environmental incidents. Should WACJV be granted Development Consent, that instrument (along with various other post approvals' documentation) will include further risk assessment and subsequent procedural notification requirements for any environmental incidents occurring on site."	Section 3.27.12	A Disaster Risk Management Plan ensures natural and human-induced emergencies associated with the Project are addressed. This Plan should be inclusive of specific Contingency Plans to manage particular events, including the management / treatment of the Mine Operations Dam (MOD) and spontaneous combustion. Disaster risk management should have been included in the revised risk assessment of the 2013 EIS. The lack of this contingency plan is consistent with the general lack of contingency plans in the RTS.
Impacts beyond DGRs	25	The Buttonderry Waste Management Facility is mentioned in the EIS in respect to visual amenity, however, the potential environmental risks (gas and leachate leakage) associated with the proximity of this facility to the project are not discussed.	No. Inadequate justification provided for disregarding potential environmental risks associated with the proximity of the facility to the Project.	"The longwall panels in the Extraction Area are located over 1 km from the Buttonderry Waste Management Facility. Each of the Waste Management Facility and the Buttonderry Surface Facilities area are located outside the SIL and as such interactions between the waste site and coal extraction are considered highly unlikely."	Section 3.27.8	Although the longwall panels are located over 1 km from the waste management facility there may be potential impacts to the facility due to subsidence, loss of geotechnical integrity, etc. Given the socio-economic and environmental significance of the facility to the area, impacts should be assessed and included in the risk assessment.



Findings of EIS Review	Finding number	Earth Systems Finding	Finding Addressed	WACJV Response	WACJV Reference (Response to Submissions, 2013)	Assessment of Response
Management and Monitoring	26	<i>The EIS is not accompanied by management and monitoring plans. It is understood that these have not yet been prepared. Good industry international practice and / or best practice require an Environmental Management and Monitoring Plan (ESMMP) to be prepared as part of the EIS process.</i>	No. No ESMMP has been developed and a specific timeframe or description of proposed plans part of the EMS not provided.	An Environmental Management Strategy (EMS) and an Environmental Monitoring Plan are included as part of the Environmental Management System to be developed and implemented in the future.	Table 11 of Section 4	An ESMMP type plan was not adopted in the 2013 EIS. The proponent has indicated a plan will be developed in the future. Without a plan to review simultaneously with the EIS it is not possible to ascertain the efficacy of the management strategies to avoid and minimise impacts.

Table 3-2. Review of WACJV's response to recommendations identified by Earth Systems in the 2013 EIS.

Recommendations of 2013 EIS Review	Earth Systems Recommendation	Recommendation Addressed	WACJV Response	WACJV Reference (Repose to Submissions, 2013)	Assessment of Response
Air quality	<i>Air quality impacts are assessed utilising relevant methodologies to ensure that detailed impact assessments of project phases are conducted effectively.</i>	No. The assertion that the impact assessment is conducted according to approved methods (DECC, 2005) is inaccurate.	"The AQGGA was completed in accordance with the Approved Methods for Modelling and Assessment of Air Pollutants in NSW (DECC, 2005) (the Approved Methods). The submission from EPA confirmed that the air quality assessment was conducted in accordance with the Approved Methods."	Section 3.5.1	<p>The impact assessment did not sum the combined effects of Project emissions and ambient conditions (total impact); therefore estimates of exceedences are not valid.</p> <p>The cumulative impacts was not calculated with maximum background concentrations as is required for Level 1 Assessment (DECC, 2005).</p> <p>The cumulative impact assessment does not consider future development in modelling.</p>
Greenhouse gas	<i>A more realistic assessment of greenhouse gas (GHG) impacts is provided by including Scope 2 and 3 emissions sources in the analysis of the GHG impacts and updating impacts of the Project on anthropogenic global warming</i>	Partially addressed.	"The AQGGA included estimates of Scope 1, 2 and 3 emissions and provided an overview of the potential impacts on the environment. It is impossible to isolate the Project's impacts on climate change at a local level, and the contribution of the Project to global changes in sea levels, acidification, etc. However, as an example, the average annual Scope 1 emissions generated by the Project would represent approximately 0.04% of Australia's annual average commitment under the Kyoto Protocol. The Scope 1 emissions would account for a very small portion of Global Greenhouse Gas (GHG) emissions, given that Australia in total contributes approximately 1.5% of global GHG emissions (ABS, 2010)."	Section 3.6.1	Although the potential Project impacts on climate change at the global level were not provided, an estimation of emissions generated by the Project on the national level was established.
Water quality	<i>Surface water quality is investigated further to ensure that all sources of contaminants are identified and that water sources are effectively monitored for changes associated with the Project.</i>	No. Surface water quality was not investigated further and AMD assessments were not conducted.	<i>There are no recorded events of AMD issues associated with contamination of water which has emanated from mines operating in the Newcastle Coal Measures.</i> "	Section 3.23.3	The RTS does not provide further consideration to AMD potential as stated above despite occurrence of ASS and PASS soils in the vicinity of potential project disturbance areas.



	<i>A geochemical assessment for potential AMD / salinity is conducted, including development of contingency plans for the management and treatment of the Mine Operations Dam</i>				
EPBC 'Water Trigger' Amendment (2013)	<i>The EPBC Act Water Trigger Amendment (2013) is considered by the Proponent.</i>	Yes. The RTS indicates a pending decision regarding application of the water trigger to the Project.	<i>"The EPBC Act Water Trigger Amendment 2013 was passed by parliament on 19 June 2013. The Minister has 60 days from the commencement of the Bill to decide whether the Project requires approval in relation to the new water trigger. In its submission, SEWPaC indicated that a decision on whether the water trigger applies to the Project was still pending."</i>	Section 3.28.6	60 days from June 19 is August 17. It would be expected that a decision would have been made prior to submission of the RTS; however this is not discussed in the RTS.
Ecology	<i>Further detailed surveys for biodiversity are conducted, including extended flora survey to establish a robust flora baseline for the Subsidence Impact Limit.</i>	Yes. Additional flora surveys were conducted in 2013.	<i>As the majority of the quadrat data provided in the EIS was collected outside of the five year timeframe prescribed by regulatory bodies, additional flora surveys were conducted in July 2013. These surveys were conducted within the infrastructure boundary at the Tooheys Road and Buttonderry Sites, as well as in the proposed Hue Hue and Tooheys Road offset areas. The July 2013 surveys provided a total of 30 additional quadrats."</i>	Section 3.9.2, 3.9.9	Additional surveys were conducted to better characterize flora, however they were predominantly focused around the proposed locations of surficial disturbance. A survey covering distribution across the Project area would assist in identify potential management measures in response to potential impacts such as subsidence which are independent of predicted surficial disturbance due to surface project infrastructure.
Ecology	<i>The Biodiversity Offset Strategy for threatened species is revised to ensure it addresses the current Policy and that currently proposed offsets for fauna habitats are reviewed for suitability.</i>	Yes. The Biodiversity offset Package (BOP) was re-assessed.	<i>"Mitigation measures such as active fauna management and monitoring will be detailed in the BMP. Compensatory measures include the provision of a comprehensive Biodiversity Offset Package (BOP), which will conserve habitat for EECs and threatened species in perpetuity." "Since the exhibition of the EIS, further fieldwork has been conducted to assess the proposed Biodiversity Offset Package (BOP) under the new EPBC Act Offsets Policy's Offsets Assessment Guide." "Biodiversity Offset Package (BOP) under the new EPBC Act Offsets Policy's Offsets Assessment Guide. In particular, assessments were conducted for the species listed as controlled action species: namely Charmhaven Apple (<i>Angophora inopinata</i>) and Black-eyed Susan (<i>Tetralochea juncea</i>), listed as Vulnerable</i>	Section 3.9.2, 3.9.9	Additional surveys were conducted to better characterize flora and fauna distribution as part of the assessment of the proposed Biodiversity Offset Package.



			<i>under the EPBC Act; and Spotted-tail Quoll (Dasyurus maculatus) and Giant Barred Frog (Mixophyes iteratus), listed as Endangered under the EPBC Act."</i>		
Mine Design and Layout	<i>Internal haulage routes are confirmed to allow assessment of potential impacts of heavy vehicle movement.</i>	No. No indication provided for the future assessment of heavy vehicle traffic on internal haulage roads.	<i>"As the Project is proposed to comprise an underground mine, very limited heavy vehicle movements within the mine will occur, primarily in relation to deliveries to site from external roads. Internal roads are shown on Figure 19 and Figure 21 of the EIS for each of the Tooheys Road and Buttonderry sites, respectively."</i>	Section 3.27.1	Although little heavy vehicle movement is expected on internal roads, it is still necessary to determine potential disturbances or impacts caused by heavy vehicles on local environment (e.g. dust, noise, vibration).
Stakeholder Engagement	<i>A robust Stakeholder Engagement Plan is developed that is inclusive of commitments to ongoing consultation and a structured grievance procedure</i>	No. The RTS does not indicate a Stakeholder Engagement Plan and grievance procedure are not specified.	<i>"WACJV has conducted and will continue to conduct a comprehensive stakeholder engagement program throughout the EIS process aimed at maximising the opportunity for community interaction. WACJV will continue to undertake consultation with stakeholders, particularly the consultation commitments made in this RTS."</i>	Section 3.24	Although the RTS states that WACJV will continue to undertake consultation with stakeholders, it does not specify a strategy, plan of how consultation will be undertaken and does not provide an indication of a grievance mechanism, a best practice approach typical of impact assessments.
Rehabilitation and Closure	<i>A comprehensive Rehabilitation and Closure Plan is prepared.</i>	No. A Rehabilitation and Closure Plan has not been prepared.	<i>"Further detail on rehabilitation objectives to ensure a safe, stable and non-polluting final landform will be included in a Rehabilitation and Closure Plan for the Project to be developed in consultation with relevant regulators. It shall include information on relevant domains and discuss final landuse, rehabilitation objectives, domain objectives, completion criteria and rehabilitation monitoring. The timing of the preparation of the plan will be consistent with any conditions of Development Consent."</i>	Section 3.22	Without developing a Rehabilitation and Closure Plan as part of the EIS, it is difficult to determine how closure and post closure impacts will be mitigated and the nature of residual impacts.
Risk Assessment and Cost Benefit Analysis	<i>The Risk Assessment and Cost Benefit Analysis are reviewed and revised based on detailed findings of further recommended work.</i>	No. The risk assessment and cost benefit analysis has not been re-rated.	<i>"This analysis indicated that the results of the BCA were not sensitive to reasonable changes in the assumptions for any of these variables. In particular, significant increases in the values used for impacts of greenhouse gas emissions, agricultural impacts and forestry impacts had little impact on the overall economic desirability of the Project."</i> <i>"Chapter 6 of the EIS provides a summary of Appendix F of the EIS which provides a detailed Revised Risk Assessment of the potential known Project risks in accordance with the WACJV Risk Assessment Matrix."</i>	Section 3.17.2, 3.27.18	Since submission of the 2013 EIS additional investigations have been undertaken and additional mitigation measures derived (refer to Table 11, Response to Submissions, 2013) which are not captured in the revised risk assessment.

			<i>The risk assessment was undertaken in accordance with the DGRs which required they identified the key issues for further assessment."</i>		
Disaster Risk Management	<i>A Disaster Risk Management Plan is developed to cover natural and human-induced emergencies associated with the Project. This Plan should be inclusive of specific Contingency Plans to manage particular events, including the management / treatment of the Mine Operations Dam (MOD) and spontaneous combustion.</i>	No. A Disaster Risk Management Plan was not developed.	<i>"Insufficient detail is provided to ascertain the exact nature of this submission; however it has been assumed here that it refers largely to environmental incidents. Should WACJV be granted Development Consent, that instrument (along with various other post approvals documentation) will include further risk assessment and subsequent procedural notification requirements for any environmental incidents occurring on site.</i>	Section 3.27.12	<p>The response states that insufficient detail was provided to determine the nature of the recommendation and appears to indicate that an assumption needed to be made that the submission refers to environmental incidents. However, in Section 3.7 of the Earth Systems Review of the 2013 EIS, it states:</p> <p><i>"Disaster risk management for naturally occurring or human-induced events have been overlooked in the EIS. These include <u>environmental emergencies such as uncontrolled discharge during high rainfall events, water storage dam wall failure, and bushfires</u>. Other disasters could include those associated with spontaneous combustion or blasting accidents.</i></p> <p><i>It is recommended that a comprehensive disaster risk management plan is developed, inclusive of detailed contingency plans to manage specific events, such as the development of contingency plan for management / treatment of the Mine Operations Dam (MOD) water that would be required should MOD water levels approach potential uncontrolled discharge stages to prevent untreated water from reaching Wallarah Creek."</i></p>
Community Health and Safety	<i>The Community Health and Safety assessment is reviewed and revised based on the findings of the further work recommended.</i>	No. Identified data gaps and uncertainties which have the potential to impact community health	<i>"Wallahah Creek and Buttonderry Creek are located outside of the Gosford-Wyong Water Supply Scheme catchment and are part of the Tuggerah Lakes Water Source. Therefore there are no potential impacts to the water quality of the Gosford-Wyong Water Supply Scheme due to possible overflows from the mine water</i>	Section 3.3.6, 3.5.1, 3.5.5	Given the information gaps and recommendations provided in this Report, responses related to community health and safety with respect to water and air quality are not adequately addressed.



		and safety have not been adequately addressed in the RTS as referenced throughout this report.	<p>management system or the proposed discharges of treated water to Wallarah Creek."</p> <p>"Section 7.1 of the AQGGA provided detailed dust emission estimates for a construction phase scenario. The estimated dust emissions during construction were found to be significantly lower (approximately 50% lower) than the estimated dust emissions during the operational phase...Due to the lower emissions during the construction phase, it can be concluded that the construction phase of the Project would also comply with the air quality criteria under all modelled climatic conditions."</p> <p>"WACJV has committed to the implementation of all best practice dust management measures outlined in the AQGGA. Full details of dust management measures will be provided in an Air Quality Management Plan (AQMP), which the proponent will prepare in accordance with the conditions of the development consent for the Project. The AQMP will describe all best practice dust control and monitoring measures to be implemented, including the measures required by the EPA."</p>		Comprehensive baselines are required to establish existing water quality, air, and traffic conditions in order to assess potential impacts, develop comprehensive monitoring and management plans.
Community Health and Safety	Potential impacts upon the Buttoderry Waste Management Facility associated with the development of the Project are fully considered.	No. Inadequate justification provided for disregarding potential environmental risks associated with the proximity of the facility to the Project.	"The longwall panels in the Extraction Area are located over 1 km from the Buttoderry Waste Management Facility. Each of the Waste Management Facility and the Buttoderry Surface Facilities area are located outside the SIL and as such interactions between the waste site and coal extraction are considered highly unlikely.	Section 3.27.8	Although the longwall panels are located over 1 km from the waste management facility there may be potential impacts to the facility due to subsidence, loss of geotechnical integrity, etc. Given the socio-economic and environmental significance of the facility to the area, impacts should be assessed and included in the risk assessment. This is a potential oversight.
Management, Monitoring and Reporting	Management and Monitoring Plans are prepared for each aspect of assessment prior to commencement of the Construction phase to clearly outline how impacts will be mitigated and managed.	Partially addressed. Management and Monitoring Plans are intended to be developed, no timeline is provided.	<p>"WACJV will develop and implement an Environmental Management System in consultation with the relevant regulators (and the Aboriginal community where relevant) consistent with Section 7 of the EIS to the approval of DP&I which shall comprise:</p> <ul style="list-style-type: none"> ▪ Environmental Management Strategy 	Section 3.25, Table 11 of Section 4.	It is best practice to include an Environmental Monitoring and Management Plan with the EIS to demonstrate commitment to managing risks and accountability to stakeholders. It should describe environmental parameter monitoring, implementation, processes and



<p>Management, Monitoring and Reporting</p>	<p><i>An independent expert is commissioned by the Proponent to conduct Environmental Audits of the project on a regular basis throughout the project life cycle.</i></p>	<p><i>An indication to conduct Environmental Audit is also provided.</i></p>	<p>(EMS);</p> <ul style="list-style-type: none"> ▪ Environmental Monitoring Plan (incorporating subsidence, groundwater, surface water, air quality and noise) ▪ Extraction Plan; ▪ Water Management Plan; ▪ Air Quality Management Plan; ▪ Energy and Greenhouse Strategy; ▪ Noise Management Plan; ▪ Biodiversity Offset Strategy; ▪ Land Clearance Protocol; ▪ Traffic and Transport Management Plan; ▪ Aboriginal Cultural Heritage Management Plan; ▪ Historic Heritage Management Plan; ▪ Soil and Land Capability Procedure (including an Acid Sulphate Soils Management Procedure); ▪ Land Management Plan; ▪ Bushfire Management Plan; ▪ Waste Management System; and Landscape Management Plan" 	<p>scheduling. Findings from regular monitoring of air and water quality etc. should be provided to interested stakeholders on a regular basis to ensure that transparency.</p>
<p>Management, Monitoring and Reporting</p>	<p><i>An Environmental Management System based on ISO14001:2004 'Environmental management systems - Requirements with guidance for use' is developed and implemented for the Project.</i></p>	<p>No. No reference to ISO14001:2004 given.</p>		

4 Conclusions

In general, the *Response to Submission* does not adequately address many of the findings highlighted by Earth Systems in its Review of the 2013 EIS. Furthermore, the recommended measures provided in the review were only partially considered in the RTS. As a result, significant data gaps and uncertainties still remain.

As the EIS was not developed according to the standard EIA approach (i.e. baseline determination, impact assessment, management and mitigation measures, residual impacts), it is not possible to determine residual impacts in many instances. Significant data gaps exist in the baseline assessments and impact analyses for various parameters as well as for the majority of impacts commonly associated with construction. This fundamental flaw in the approach to the EIA allows for significant uncertainty regarding the residual impacts.

Deficiencies in baseline assessment are perhaps most pronounced for groundwater quality and components of surface water quality and include the following significant aspects:

- Water quality monitoring for groundwater was limited to pH, electrical conductivity and TDS. This limitation provides very little basis for comparison.
- There has been no baseline assessment of the water quality in the Wallarah Creek tributary controlled discharge point for the Project. Impacts related to discharge will be difficult to interpret without an understanding of baseline conditions.
- Geochemical analysis for AMD were not conducted, though there is some evidence of material that could generate AMD south of the Project Boundary along the lower reaches of the Jilliby Creek and Little Jilliby Creek, and along the unnamed waterway adjacent to western boundary of the Buttonderry Site

The impact assessment remains flawed in a number of areas, including:

- Assessment of construction phase impacts (and their management, mitigation and monitoring) were largely omitted from the process.
- The air quality impact assessment was not conducted according to the Approved Methods for Modelling and Assessment of Air Pollutants in NSW (DECC, 2005). The approach employed in the EIS, and defended in the *Response to Submission*, underrepresents the likelihood for exceedences in various air quality criteria.
- Lack of closure and rehabilitation planning in project design.

5 References

References provided below include guidelines, regulations and best practices relevant to the Wallarah 2 Coal Project and this review.

- Commonwealth of Australia (2006a) *Introduction to Cost-Benefit - Analysis and Alternative Evaluation Methodologies*, January 2006.
- DEC (2004) *Approved Methods for the Sampling and Analysis of Water Pollution in NSW*. Department of Environment and Conservation NSW, Sydney.
- DECC (2005) *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW*. Department of Environment and Conservation NSW, Sydney.
- DECC (2006) *Technical Framework for Odour Assessment*. Department of Environment and Conservation NSW, Sydney.
- DECC (2007) *Waste Avoidance and Resource Recovery Strategy 2007*. Department of Environment and Climate Change NSW.
- DECC (2009) *Waste Classification Guidelines*. Department of Environment and Climate Change NSW.
- DUAP (2000) *Coal Mines and Associated Infrastructure - EIS Guideline*. Department of Urban Affairs and Planning.
- Earth Systems. (2013). *Review of the 2013 EIS*.
- IAIA (1999) *Principles of Environmental Impact Assessment Best Practice*. In cooperation with the Institute of Environment Assessment, UK.
- IAIA (2005) *Biodiversity in Impact Assessment*. International Association for Impact Assessment. Special Publications Series No. 3.
- ICMM (2003) *Sustainable Development Framework: ICMM Principles*. International Council on Mining and Metals.
- Institute of Ecology and Environmental Management (2006) *Guidelines for Ecological Impact Assessment in the United Kingdom* (version 7 July 2006). <http://www.ieem.org.uk/ecia/index.html>
- International Environmental Consultants Pty Ltd (2010) Wallarah 2 Coal Project - Environmental Assessment.
- NSW DECC (1994) *Environmental Noise Control Manual*. Department of Environment and Conservation NSW, Sydney.
- NSW DECC (1999) *Environmental Criteria for Road Traffic Noise*. Department of Environment and Conservation NSW, Sydney.
- NSW DECC (2006) *Assessing Vibration: A Technical Guideline*. Department of Environment and Conservation NSW, Sydney.
- NSW DECC (2009) *Interim Construction Noise Guideline*. Department of Environment and Conservation NSW, Sydney.
- NSW Department of Mineral Resources (2003) *Guidelines for Application for Subsidence Management Approvals*.



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- NSW Department of Planning (2008) *Impacts of Potential Underground Coal Mining in the Wyong LGA- Strategic Review.*
- NSW Department of Planning (2008) *Impacts of Underground Coal Mining on Natural Features in the Southern Coalfields - Strategic Review.*;
- NSW Minerals Council (1997) *Guidelines for Best Practice Community Consultation in the New South Wales Mining and Extractive Industries.*
- NSW Treasury (2007) *NSW Treasury Guidelines for Economic Appraisal*, NSW Treasury.
- Pacific Power International (1997) *Cooranbong Colliery Life Extension Project Overburden Strata Groundwater Study*, June 1997.
- World Bank (2006) *Environmental Impact Assessment Regulations and Strategic Environmental Assessment Requirements: Practices and Lessons Learned in East and Southeast Asia.* Environment and Social Development Department.

Development Consent

Section 89E of the *Environmental Planning and Assessment Act 1979*

As delegate of the Minister for Planning and Infrastructure, the Planning Assessment Commission of New South Wales (the Commission) approves the development application referred to in schedule 1, subject to the conditions in schedules 2 to 6.

These conditions are required to:

- prevent, minimise, and/or offset adverse environmental impacts;
- set standards and performance measures for acceptable environmental performance;
- require regular monitoring and reporting; and
- provide for the ongoing environmental management of the development.

Member of the Commission

Member of the Commission

Sydney

2013

SCHEDULE 1

Application Number:	SSD-4974
Applicant:	Wyang Areas Coal Joint Venture
Consent Authority:	Minister for Planning and Infrastructure
Land:	See Appendix 1
Development:	Wallah 2 Coal Project

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DEFINITIONS

Approved mine plan	The mine plans depicted in the figures in Appendix 3
Adaptive management	Adaptive management includes monitoring subsidence impacts and subsidence effects and, based on the results, modifying the mining plan as mining proceeds to ensure that the subsidence effects, subsidence impacts and/or associated environmental consequences remain within predicted and designated ranges and in compliance with the conditions of this approval
Annual Review	The review required by Condition 3 of Schedule 6
Applicant	Wyong Areas Coal Joint Venture, or any other person or persons who rely on this consent to carry out the development that is subject to this consent
ARTC	Australian Rail Track Corporation
BCA	Building Code of Australia
Built features	Includes any building or work erected or constructed on land, and includes dwellings and infrastructure such as any formed road, street, path, walk, or driveway; any pipeline, water, sewer, telephone, gas or other service main
CCC	Community Consultative Committee
Conditions of this approval	Conditions contained in Schedules 2 to 6 inclusive
Construction	The demolition of buildings or works, carrying out of works and erection of buildings covered by this approval
CPI	Consumer Price Index, as published by the Australian Bureau of Statistics
Day	The period from 7am to 6pm on Monday to Saturday, and 8am to 6pm on Sundays and Public Holidays
Department	Department of Planning and Infrastructure
Development	The development described in the EIS
Development area	All land to which the development application applies, including the longwall mining domains and the surface facilities sites, as listed in Appendix 1
Director-General	Director-General of the Department, or delegate
DRE	Division of Resources and Energy, within the Department of Trade & Investment, Regional Infrastructure & Services
EIS	Environmental Impact Statement titled <i>Wallarrah 2 Coal Project Environmental Impact Statement</i> , dated April 2013, associated response to issues raised in submissions, titled <i>Wallarrah 2 Coal Project Response to Submissions</i> , dated September 2013, and addition information regarding residual concerns, titled <i>Residual Matters Report</i> , dated October 2013
Environmental consequences	The environmental consequences of subsidence impacts, including: damage to built features; loss of surface water flows to the subsurface; loss of standing pools; slope changes to streams; adverse water quality impacts; development of iron bacterial mats; cliff falls; rock falls; landslides; damage to Aboriginal heritage sites; impacts on aquatic ecology; and ponding.
EPA	Environment Protection Authority
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EP&A Regulation	<i>Environmental Planning and Assessment Regulation 2000</i>
EPL	Environment Protection Licence issued under the POEO Act
Executive Director Mineral Resources	Executive Director Mineral Resources within DRE, or the equivalent role
Evening	The period from 6pm to 10pm
Feasible	Feasible relates to engineering considerations and what is practical to build or to implement
First workings	Development of main headings, longwall gate roads, related cut throughs and the like
Fisheries NSW	Fisheries NSW, within the Department of Primary Industries
Ha	Hectare
Heritage item	An item as defined under the <i>Heritage Act 1977</i> and/or an Aboriginal object or Aboriginal place as defined under the <i>National Parks and Wildlife Act 1974</i>
Incident	A set of circumstances that: <ul style="list-style-type: none"> • causes or threatens to cause material harm to the environment; and/or • breaches or exceeds the limits or performance measures/criteria in this consent
Jilliby SCA	Jilliby State Conservation Area
Land	As defined in the EP&A Act, except for where the term is used in the noise and air quality conditions in schedule 4 of this consent where it is defined to mean the whole of a lot, or contiguous lots owned by the same landowner, in a current plan registered at the Land Titles Office at the date of this consent
Material harm to the environment	Actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial

Mining operations	Includes all extraction, processing, handling, storage and transportation of coal carried out on the site
Minister	Minister for Planning and Infrastructure, or delegate
Minor	Not very large, important or serious
Mitigation	Activities associated with reducing the impacts of the development prior to or during those impacts occurring
MSB	Mine Subsidence Board
Negligible	Small and unimportant, such as to be not worth considering
Night	The period from 10pm to 7am on Monday to Saturday, and 10pm to 8am on Sundays and Public Holidays
NOW	NSW Office of Water
OEH	Office of Environment and Heritage
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
Privately-owned land	Land that is not owned by a public agency, or a mining company (or its subsidiary)
Reasonable	Reasonable relates to the application of judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements
Reasonable Costs	The costs agreed between the Department and the Applicant for obtaining independent experts to review the adequacy of any aspects of an Extraction Plan, or where such costs cannot be agreed, the costs determined by the dispute resolution process
Rehabilitation	The treatment or management of land disturbed by the development for the purpose of establishing a safe, stable and non-polluting environment
Remediation	Activities associated with partially or fully repairing or rehabilitating the impacts of the development or controlling the environmental consequences of this impact
RMS	Roads and Maritime Services
Rock face feature	A rock face having a minimum length of 20 metres, heights between 3 metres and 5 metres and a minimum slope of 2 to 1 (>63.4°)
ROM coal	Run-of-mine coal
Safe, serviceable & repairable	Safe means no danger to users who are present, serviceable means available for its intended use, and repairable means damaged components can be repaired economically
SCA	State Conservation Area
Second workings	Extraction of coal from longwall panels, mini-wall panels or pillar extraction
Site	All land within the Development Area (see Appendix 2)
SMP	Subsidence Management Plan
Statement of Commitments	The Management and Monitoring Summary set out in the EIS
Steep slopes	An area of land having a gradient greater than 1 in 3 (33% or 18.3°)
Subsidence	The totality of subsidence effects, subsidence impacts and environmental consequences of subsidence impacts
Subsidence effects	Deformation of the ground mass due to mining, including all mining-induced ground movements, such as vertical and horizontal displacement, tilt, strain and curvature
Subsidence impacts	Physical changes to the ground and its surface caused by subsidence effects, including tensile and shear cracking of the rock mass, localised buckling of strata caused by valley closure and upsidence and surface depressions or troughs
Surface facilities sites	The Buttonderry Site and Tooheys Road Site areas; all ventilation shaft sites; and any other site subject to proposed surface disturbance (excluding subsidence impacts) associated with the development (see Appendix 4)
TNSW	Transport for New South Wales
WSC	Wyong Shire Council

SCHEDULE 2 ADMINISTRATIVE CONDITIONS

OBLIGATION TO MINIMISE HARM TO THE ENVIRONMENT

1. In addition to meeting the specific performance criteria established under this consent, the Applicant shall implement all reasonable and feasible measures to prevent and/or minimise any harm to the environment that may result from the construction, operation, or rehabilitation of the development.

TERMS OF CONSENT

2. The Applicant shall carry out the development generally in accordance with the:
 - (a) EIS;
 - (b) Statement of Commitments; and
 - (c) conditions of this consent.

Note: The general layout of the development is shown in Appendices 2 to 4

3. If there is any inconsistency between the above documents, the more recent document shall prevail to the extent of the inconsistency. However, the conditions of this consent shall prevail to the extent of any inconsistency.
4. The Applicant shall comply with any reasonable requirement/s of the Director-General arising from the Department's assessment of:
 - (a) any strategies, plans, programs, reviews, audits, reports or correspondence that are submitted in accordance with this consent; and
 - (b) the implementation of any actions or measures contained in these documents.

LIMITS ON CONSENT

Mining Operations

5. The Applicant may carry out mining operations on the site until **31 March** 2041.

Note: Under this consent, the Applicant is required to rehabilitate the site and perform additional undertakings to the satisfaction of either the Director-General or the Executive Director Mineral Resources. Consequently this consent will continue to apply in all other respects other than the right to conduct mining operations until the rehabilitation of the site and these additional undertakings have been carried out satisfactorily.

Coal Production and Transportation

6. The Applicant shall not extract more than 5 million tonnes of ROM coal from the site in any calendar year.
7. The Applicant shall transport all ROM coal from the site to the Port of Newcastle via rail.

Hours of Operation

8. The Applicant may undertake mining operations 24 hours a day, 7 days a week.

Construction Hours

9. The Applicant may undertake construction activities between the hours of 7am to 6pm Monday to Friday, and 8am to 1pm Saturday, with no construction activities on Sundays or public holidays.

STRUCTURAL ADEQUACY

10. The Applicant shall ensure that all new buildings and structures, and any alterations or additions to existing buildings and structure, that are part of the development are constructed in accordance with:
 - (a) the relevant requirements of the BCA; and
 - (b) any additional requirements of the MSB where the building or structure is located on land within declared Mine Subsidence Districts.

Notes:

- Under Part 4A of the EP&A Act, the Applicant is required to obtain construction and occupation certificates for the proposed building works.
- Part 8 of the EP&A Regulation sets out the requirements for the certification of the development.
- Under Section 15 of the Mine Subsidence Compensation Act 1961, the Applicant is required to obtain the MSB's approval before constructing any improvements in a Mine Subsidence District.

DEMOLITION

11. The Applicant shall ensure that all demolition work is carried out in accordance with *Australian Standard AS 2601-2001: The Demolition of Structures*, or its latest version.

OPERATION OF PLANT AND EQUIPMENT

12. The Applicant shall ensure that all plant and equipment used at the site is:
- (a) maintained in a proper and efficient condition; and
 - (b) operated in a proper and efficient manner.

STAGED SUBMISSION OF STRATEGIES, PLANS OR PROGRAMS

13. With the approval of the Director-General, the Applicant may submit any strategies, plans or programs required by this consent on a progressive basis.

Notes:

- *While any strategy, plan or program may be submitted on a progressive basis, the Applicant will need to ensure that the existing operations on site are covered by suitable strategies, plans or programs at all times; and*
 - *If the submission of any strategy, plan or program is to be staged, then the relevant strategy, plan or program must clearly describe the specific stage to which the strategy, plan or program applies, the relationship of this stage to any future stages, and the trigger for updating the strategy, plan or program.*
-

**SCHEDULE 3
SPECIFIC ENVIRONMENTAL CONDITIONS – UNDERGROUND MINING**

SUBSIDENCE

Performance Measures – Natural and Heritage Features

1. The Applicant shall ensure that the development does not cause any exceedances of the performance measures in Table 1, to the satisfaction of the Director-General.

Table 1: Subsidence Impact Performance Measures

Watercourses	
6 th Order Streams	<ul style="list-style-type: none"> Negligible environmental consequences.
3 rd , 4 th and 5 th Order Streams	<ul style="list-style-type: none"> Negligible environmental consequences over at least 80% of the stream length subject to vertical subsidence >20 mm. No connective cracking between the surface and the underground workings. No subsidence impact or environmental consequence greater than minor.
1 st and 2 nd Order Streams	<ul style="list-style-type: none"> No greater subsidence impact or environmental consequences than predicted in the EIS. No connective cracking between the surface and the underground workings.
Land	
Steep slopes	Minor environmental consequences (that is occasional rockfalls, displacement or dislodgement of boulders or slabs, or fracturing, that in total do not impact more than 3% of the total face area of such features within the mining area).
Rock face features	Minor environmental consequences (that is occasional rockfalls, displacement or dislodgement of boulders or slabs, or fracturing, that in total do not impact more than 3% of the total face area of such features within the mining area).
Biodiversity	
Threatened species, threatened populations, or endangered ecological communities	Negligible environmental consequences.
Heritage sites	
Aboriginal heritage sites listed in Table 1 of Appendix 5	Negligible subsidence impacts or environmental consequences
Historic heritage sites listed in Table 2 of Appendix 5	Negligible loss of heritage value.
Other Aboriginal and historic heritage sites	Negligible subsidence impacts or environmental consequences.
Mine workings	
First workings under an approved Extraction Plan beneath any feature where performance measures in this table require negligible subsidence impacts or negligible environmental consequences	To remain longterm stable and non-subsiding.
Second workings	To be carried out only within longwall mining domains, in accordance only with an approved Extraction Plan.

Notes:

- Classification of streams in accordance with Strahler stream order system.
- The Applicant will be required to define more detailed performance indicators (including impact assessment criteria) for each of these performance measures in the various management plans that are required under this consent (see conditions 13, 17 and 19 below).
- Measurement and/or monitoring of compliance with performance measures and performance indicators is to be undertaken using generally accepted methods that are appropriate to the environment and circumstances in which the feature or characteristic is located. These methods are to be fully described in the relevant management plans. In the event of a dispute over the appropriateness of proposed methods, the Director-General will be the final arbiter.
- In the case of features within the Jilliby State Conservation Area, the Director-General's satisfaction can only be expressed following consultation with OEH.

Performance Measures – Built Features

2. The Applicant shall ensure that the development does not cause any exceedances of the performance measures in Table 2, to the satisfaction of the Director-General.

Table 2: Subsidence Impact Performance Measures

Built features	
Key public infrastructure: • F3 Freeway; • Mardi to Mangrove Creek Dam Pipeline; • Main Northern Railway; and • TransGrid Towers.	Always safe and serviceable. Damage that does not affect safety or serviceability must be fully repairable, and must be fully repaired.
Fibre-Optic Cables	Always safe.
Power lines and timber power poles	Serviceability should be maintained wherever practicable. Loss of serviceability must be fully compensated.
Privately-owned residences	
Roads	Damage must be fully repairable, and must be fully repaired or else replaced or fully compensated.
Other built features and improvements, including farm dams, swimming pools, tennis courts, tracks and fences	
Public safety	
Public Safety	Negligible additional risk.

Notes:

- The Applicant will be required to define more detailed performance indicators for each of these performance measures in Built Features Management Plans or Public Safety Management Plan (see condition 4 below).
 - Measurement and/or monitoring of compliance with performance measures and performance indicators is to be undertaken using generally accepted methods that are appropriate to the environment and circumstances in which the feature or characteristic is located. These methods are to be fully described in the relevant management plans. In the event of a dispute over the appropriateness of proposed methods, the Director-General will be the final arbiter.
 - Requirements regarding safety or serviceability do not prevent preventative or mitigatory actions being taken prior to or during mining in order to achieve or maintain these outcomes.
 - Requirements under this condition may be met by measures undertaken in accordance with the Mine Subsidence Compensation Act 1961.
3. Any dispute between the Applicant and the owner of any built feature over the interpretation, application or implementation of the performance measures in Table 2 is to be settled by the Director-General, following consultation with the Executive Director Mineral Resources. Any decision by the Director-General shall be final and not subject to further dispute resolution under this consent.

Extraction Plan

4. The Applicant shall prepare and implement an Extraction Plan for all second workings on site to the satisfaction of the Director-General. Each extraction plan must:
- be prepared by suitably qualified and experienced persons whose appointment has been endorsed by the Director-General;
 - be approved by the Director-General before the Applicant carries out any of the second workings covered by the plan;
 - include detailed plans of existing and proposed first and second workings and any associated surface development;
 - include detailed performance indicators for each of the performance measures in Tables 1 and 2;
 - provide revised predictions of the potential subsidence effects, subsidence impacts and environmental consequences of the proposed second workings, incorporating any relevant information obtained since this approval;
 - describe the measures that would be implemented to ensure compliance with the performance measures in Tables 1 and 2, and manage or remediate any impacts and/or environmental consequences;
 - include a Built Features Management Plan, which has been prepared in consultation with DRE and the owners of affected built features, to manage the potential subsidence impacts and/or environmental consequences of the proposed second workings, and which:
 - addresses in appropriate detail all items of key public infrastructure (with particular consideration of angle towers on transmission lines and powerlines), other public infrastructure and all other built features;

- has been prepared following appropriate consultation with the owner/s of potentially affected feature/s;
 - recommends appropriate remedial measures and includes commitments to mitigate, repair, replace or compensate all predicted impacts on potentially affected built features in a timely manner; and
 - in the case of all key public infrastructure, and other public infrastructure except roads, trails and associated structures, reports external auditing for compliance with ISO 31000 (or alternative standard agreed with the infrastructure owner), and provides for annual auditing of compliance and effectiveness during extraction which may impact the infrastructure;
- (h) include a Water Management Plan, which has been prepared in consultation with EPA and NOW, which provides for the management of the potential impacts and/or environmental consequences of the proposed second workings on watercourses and aquifers, including:
- surface and groundwater impact assessment criteria, including trigger levels for investigating any potentially adverse impacts on water resources or water quality;
 - a program to monitor and report stream flows, assess any changes resulting from subsidence impacts and remediate and improve stream stability;
 - a program to monitor flooding (including updated flood modelling), minimise and mitigate flood impacts on residences, private properties and roads, and identify private properties where mitigation measures are not appropriate and compensation would be offered;
 - a program to monitor and report groundwater inflows to underground workings;
 - a program to predict, manage and monitor impacts to groundwater bores on privately-owned land; and
 - a program to monitor impacts on any groundwater dependent ecosystems and riparian vegetation, particularly within the Jilliby SCA; and
- (i) include a Biodiversity Management Plan, which has been prepared in consultation with OEH, which provides for the management of the potential impacts and/or environmental consequences of the proposed second workings on aquatic and terrestrial flora and fauna, with a specific focus on threatened species, populations and their habitats; endangered ecological communities; and water dependent ecosystems;
- (j) include a Land Management Plan, which has been prepared in consultation with any affected public authorities, to manage the potential impacts and/or environmental consequences of the proposed second workings on land in general, with a specific focus on cliffs, rock face features and steep slopes;
- (k) include a Heritage Management Plan, which has been prepared in consultation with OEH and relevant stakeholders for both Aboriginal and historic heritage, to manage the potential environmental consequences of the proposed second workings on both Aboriginal and non-Aboriginal heritage items, and reflects the requirements of condition 21 of schedule 4;
- (l) include a Public Safety Management Plan, which has been prepared in consultation with DRE, to ensure public safety in the mining area;
- (m) include a Subsidence Monitoring Program, which has been prepared in consultation with DRE; to:
- provide data to assist with the management of the risks associated with subsidence;
 - validate the subsidence predictions;
 - analyse the relationship between the predicted and resulting subsidence effects and predicted and resulting impacts under the plan and any ensuing environmental consequences; and
 - inform the contingency plan and adaptive management process;
- (n) include a contingency plan that expressly provides for adaptive management where monitoring indicates that there has been an exceedance of any performance measure in Tables 1 and 2, or where any such exceedance appears likely;
- (o) proposes appropriate revisions to the Rehabilitation Management Plan required under condition 28 of Schedule 4; and
- (p) include a program to collect sufficient baseline data for future Extraction Plans.

Notes:

- *In accordance with Condition 5 of Schedule 2, the preparation and implementation of Extraction Plans may be staged, with each plan covering a defined area of underground workings. In addition, these plans are only required to contain management plans that are relevant to the specific underground workings that are being carried out.*

5. The Applicant shall ensure that the management plans required under conditions 4(g)-(m) above include:
- (a) an assessment of the potential environmental consequences of the Extraction Plan, incorporating any relevant information that has been obtained since this approval; and
 - (b) a detailed description of the measures that would be implemented to remediate predicted impacts.

First Workings

6. The Applicant may carry out first workings within the development area, other than in accordance with an approved extraction plan, provided that DRE is satisfied that the first workings are designed to remain stable and non-subsiding, except insofar as they may be impacted by approved second workings.

Payment of Reasonable Costs

7. The Applicant shall pay all reasonable costs incurred by the Department to engage suitably qualified, experienced and independent experts to review the adequacy of any aspect of an Extraction Plan.

SURFACE INFRASTRUCTURE MANAGEMENT**Gas Drainage**

8. The Applicant shall ensure that all gas drainage pipelines (other than connection points, monitoring points, dewatering facilities, regulation or isolation points) between gas drainage plants are buried, unless otherwise agreed with the relevant landowner or unless burial is inappropriate for safety or other reasons, to the satisfaction of the Director-General.
9. The Applicant shall prepare and implement a Gas Drainage Management Plan in respect of construction and use of future gas drainage infrastructure to the satisfaction of the Director-General. This plan must be submitted to the Director-General for approval prior to the construction of any future gas drainage infrastructure and must include details of the Applicant's commitments regarding:
 - (a) community consultation;
 - (b) landholder agreements;
 - (c) assessment of noise, air quality, traffic, biodiversity, heritage, public safety and other impacts in accordance with approved methods;
 - (d) avoidance of significant impacts and minimisation of impacts generally;
 - (e) beneficial re-use or flaring of drained hydrocarbon gases, wherever practicable;
 - (f) achievement of applicable standards and goals;
 - (g) mitigation and/or compensation for significant noise, air quality and visual impacts; and
 - (h) rehabilitation of disturbed sites.

Service Boreholes

10. The Applicant shall prepare and implement a Service Boreholes Management Plan in respect of construction and use of future service boreholes to the satisfaction of the Director-General. This plan must be submitted to the Director-General for approval prior to the construction of any future service borehole and must include details of the Applicant's commitments regarding:
 - (a) community consultation;
 - (b) landholder agreements;
 - (c) assessment of noise, air quality, traffic, biodiversity, heritage, public safety and other impacts in accordance with approved methods;
 - (d) avoidance of significant impacts and minimisation of impacts generally;
 - (e) achievement of applicable standards and goals;
 - (f) mitigation and/or compensation for significant noise, air quality and visual impacts; and
 - (g) rehabilitation of disturbed sites.

Personal Emergency Device (PED) Communications

11. The Applicant shall prepare and implement a PED Communications Management Plan in respect of construction and use of future PED communications infrastructure to the satisfaction of the Director-General. This plan must be submitted to the Director-General for approval prior to the construction of any future PED communications infrastructure and must include details of the Applicant's commitments regarding:
 - (a) community consultation;
 - (b) landholder agreements;
 - (c) assessment of noise, air quality, traffic, biodiversity, heritage, public safety and other impacts in accordance with approved methods;
 - (d) avoidance of significant impacts and minimisation of impacts generally;
 - (e) achievement of applicable standards and goals;
 - (f) mitigation and/or compensation for significant noise, air quality and visual impacts; and
 - (g) rehabilitation of disturbed sites.

SCHEDULE 4
SPECIFIC ENVIRONMENTAL CONDITIONS – GENERAL

NOISE**Noise Impact Assessment Criteria**

1. The Applicant shall ensure that the noise generated by the development does not exceed the criteria in Table 4 at any residence on privately-owned land, or within the Jilliby SCA.

Table 3: Operational Noise Criteria dB(A)

Location	Day	Evening	Night	Night
	<i>L_{Aeq} (15 min)</i>	<i>L_{Aeq} (15 min)</i>	<i>L_{Aeq} (15 min)</i>	<i>L_{A1} (1 min)</i>
M9	38	38	38	48
P1	35	35	35	52
P2	40	40	35	52
P3	35	35	35	52
P4	35	35	35	54
P5	35	35	35	54
P6	39	39	37	48
P7	41	41	40	51
P8	45	45	43	57
P9	42	42	42	57
P10	37	37	37	58
	<i>L_{Aeq} (period)</i>			-
Jilliby SCA	50 (when in use)			-

Notes:

- To identify the locations referred to in Table 3, refer to Appendix 6.
- Noise generated by the development is to be measured in accordance with the relevant requirements and exemptions (including certain meteorological conditions) of the NSW Industrial Noise Policy. Appendix 5 sets out the meteorological conditions under which these criteria apply, and the requirements for evaluating compliance with these criteria.

However, these criteria do not apply if the Applicant has a written agreement with the relevant landowner to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

Operating Conditions

2. The Applicant shall:
- (a) implement best management practice to minimise the construction, operational, road and rail noise of the project;
 - (b) operate an on-site noise management system to ensure compliance with the relevant conditions of this approval;
 - (c) minimise the noise impacts of the project during meteorological conditions under which the noise limits in this consent do not apply (see Appendix 4);
 - (d) regularly assess the real-time noise monitoring to ensure compliance with the relevant conditions of this consent,
- to the satisfaction of the Director-General.

Noise Management Plan

3. The Applicant shall prepare and implement a Noise Management Plan for the development to the satisfaction of the Director-General. This plan must:
- (a) be prepared in consultation with EPA, and be approved by the Director-General prior to the commencement of the construction of the surface facilities sites;
 - (b) describe the mitigation measures that would be implemented to minimise noise during construction and operations, including road noise generated by vehicles associated with the development;
 - (c) seek to minimise road traffic noise generated by employee commuter vehicles on public roads, particularly on Hue Hue Road and Bushells Ridge Road;
 - (d) describe the proposed noise management system in detail;
 - (e) include a noise monitoring program that:
 - uses a combination of real-time and supplementary attended monitoring to evaluate the performance of the development; and
 - evaluates and reports on:
 - the effectiveness of the on-site noise management system; and

- compliance against the noise operating conditions; and
- defines what constitutes a noise incident, and includes a protocol for identifying and notifying the Department and relevant stakeholders of any noise incidents.

AIR QUALITY & GREENHOUSE GAS

Odour

4. The Applicant shall ensure that no offensive odours are emitted from the site, as defined under the POEO Act.

Greenhouse Gas Emissions

5. The Applicant shall implement all reasonable and feasible measures to minimise the release of greenhouse gas emissions from the site to the satisfaction of the Director-General.

Air Quality Criteria

6. The Applicant shall ensure that all reasonable and feasible avoidance and mitigation measures are employed so that the particulate emissions generated by the development do not exceed the criteria listed in Tables 4, 5 and 6 at any residence on privately-owned land or on more than 25 percent of any privately-owned land.

Table 4: Long term criteria for particulate matter

Pollutant	Averaging period	^d Criterion
Total suspended particulate (TSP) matter	Annual	^a 90 µg/m ³
Particulate matter < 10 µm (PM ₁₀)	Annual	^a 30 µg/m ³

Table 5: Short term criterion for particulate matter

Pollutant	Averaging period	^d Criterion
Particulate matter < 10 µm (PM ₁₀)	24 hour	^a 50 µg/m ³

Table 6: Long term criteria for deposited dust

Pollutant	Averaging period	Maximum increase in deposited dust level	Maximum total deposited dust level
^c Deposited dust	Annual	^b 2 g/m ² /month	^a 4 g/m ² /month

Notes for Tables 4-6:

- ^a Total impact (ie incremental increase in concentrations due to the development plus background concentrations due to other sources);
- ^b Incremental impact (ie incremental increase in concentrations due to the development on its own);
- ^c Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method; and
- ^d Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents, illegal activities or any other activity agreed to by the Director-General in consultation with OEH.

Operating Conditions

7. The Applicant shall:
 - (a) implement best practice air quality management at the site, including all reasonable and feasible measures to minimise off-site odour and dust emissions generated by the project, including from any spontaneous combustion on site;
 - (b) operate an air quality management system on site to ensure compliance with the relevant conditions of this approval;
 - (c) minimise the air quality impacts of the project during adverse meteorological conditions and extraordinary events (see note d to Tables 4-6 above); and

to the satisfaction of the Director-General.

Air Quality & Greenhouse Gas Management Plan

8. The Applicant shall prepare and implement a detailed Air Quality & Greenhouse Gas Management Plan for the development to the satisfaction of the Director-General. This plan must:
- (a) be prepared in consultation with EPA, and be approved by the Director-General prior to the commencement of the construction of the surface facilities sites;
 - (b) describe the measures that would be implemented to ensure compliance with the relevant air quality criteria and operating conditions of this approval;
 - (c) describe the measures that would be implemented to minimise the greenhouse gas emissions from the site;
 - (d) describe the proposed on-site air quality management system; and
 - (e) include an air quality monitoring program that:
 - is capable of evaluating the operating conditions of this approval;
 - uses a combination of high volume samplers, continuous monitoring instruments and dust deposition gauges;
 - evaluates and reports on:
 - the effectiveness of the air quality management system; and
 - compliance against the air quality operating conditions; and
 - defines what constitutes an air quality incident, and includes a protocol for identifying and notifying the Department and relevant stakeholders of any air quality incidents.

METEOROLOGICAL MONITORING

9. During the life of the development, the Applicant shall ensure that there is a suitable meteorological station operating in the vicinity of the site that:
- (a) complies with the requirements in the *Approved Methods for Sampling of Air Pollutants in New South Wales* guideline; and
 - (b) is capable of continuous real-time measurement of temperature lapse rate in accordance with the *NSW Industrial Noise Policy*.

WATER

Note: Under the Water Act 1912 and/or the Water Management Act 2000, the Applicant is required to obtain the necessary water licences for the development.

Water Supply

10. The Applicant shall ensure that it has sufficient water for all stages of the development, and if necessary, adjust the scale of mining operations to match its available water supply, to the satisfaction of the Director-General.

Surface Water Discharges

11. The Applicant shall ensure that all surface water discharges from the site comply with the discharge limits (both volume and quality) set for the development in any EPL.

Except as may be expressly provided by an EPL, the Applicant shall comply with Section 120 of the POEO Act during the carrying out of the development.

Compensatory Water Supply

12. The Applicant shall provide a compensatory water supply to any owner of privately-owned land whose water supply is adversely impacted (other than an impact that is negligible) as a result of the development, in consultation with NOW, and to the satisfaction of the Director-General.

The compensatory water supply measures must provide an alternative long-term supply of water that is equivalent to the loss attributed to the development. Equivalent water supply must be provided (at least on an interim basis) within 24 hours of the loss being identified.

If the Applicant and the landowner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Director-General for resolution.

If the Applicant is unable to provide an alternative long-term supply of water, then the Applicant shall provide alternative compensation to the satisfaction of the Director-General.

Water Management Plan

13. The Applicant shall prepare and implement a Water Management Plan for the project, for all areas that are not, or will not, be subject to condition 4 of schedule 3, to the satisfaction of the Director-General. This plan must be prepared in consultation with NOW and the EPA, by suitably qualified and experienced persons, and be approved by the Director-General prior to the commencement of the construction of the surface facilities sites. This plan must include:
- (a) a comprehensive water balance for the project that includes details of:
 - sources and security of water supply;
 - water make in the underground workings;
 - measures to minimise potable water use and to reuse and recycle water; and
 - any water discharges;
 - (b) a **Surface Facilities Water Management Plan**, that includes:
 - a detailed description of water management systems for each surface facilities site, including:
 - clean water diversion systems;
 - erosion and sediment controls; and
 - any water storages;
 - a **geomorphological assessment** of Wallarah Creek to map any existing erosion;
 - detailed baseline data on surface water flows and quality in creeks and other waterbodies that could potentially be affected by the surface facilities sites and other surface activities, particularly Wallarah Creek;
 - surface water and stream health impact assessment criteria including trigger levels for investigating any potentially adverse surface water impacts; and
 - monitoring and reporting procedures, including a program to monitor and assess:
 - surface water flows and quality;
 - impacts on water users;
 - stream health; and
 - channel stability; and
 - (c) a **Brine Treatment Management Plan**, which must include:
 - a detailed description of processes for managing brine treatment on site and disposal of brine and salt in underground mine workings, including:
 - the volumes of brine and salt produced;
 - the capacity of on-site and underground storages for brine and salt; and
 - measures to monitor and mitigate any impacts of underground brine and salt storage on groundwater and surface water resources.

BIODIVERSITY

Frog Research Program

14. The Applicant shall prepare and implement a research program into endangered frog species within the Jilliby SCA to the satisfaction of the Director-General and allocate \$xx in total to this program for expenditure over a period of xx years from the date of the program's approval. This program must:
- (a) be prepared in consultation with OEH, and submitted to the Director-General for approval by xx 2014;
 - (b) include further survey work to identify the existing populations of endangered frog species in the Jilliby SCA, including the Stuttering, Giant Barred, Giant Burrowing, Green-thighed, Green and Golden Bell and Littlejohn's Green Tree Frogs;
 - (c) be directed at research into improving the prediction, assessment, remediation and/or avoidance of subsidence impacts and environmental consequences on endangered frog species; and
 - (d) be targeted at genuine research, as opposed to implementing other matters required by this consent.

The Applicant shall submit regular reports on the findings of the research program to the Director-General every 2 years from the date of the program's approval, for the life of the project.

Biodiversity Offset Strategy

15. The Applicant shall implement the biodiversity offset strategy described in the EIS and summarised in Table 7, to the satisfaction of the Director-General.

Table 7: Summary of the Biodiversity Offset Strategy

Area	Offset Type	Minimum Size/Amount
Hue Hue Road Offset area	Blackbutt-Turpentine open forest (EEC)	9.0
	Rough-barked Apple – Red Gum Grassy Woodland (EEC)	0.4
	Spotted Gum – Broad-leaved Ironbark grassy open forest (EEC)	55.4

	Remnant native vegetation	55.7
Tooheys Road Site North area	Paperbark swamp forest (EEC)	3.3
	Swamp Mahogany swamp forest (EEC)	0.3
	Remnant native vegetation	38.6
Tooheys Road Site South area	Swamp Mahogany swamp forest (EEC)	6.2
	Paperbark swamp forest (EEC)	0.6
	Blackbutt-Turpentine open forest (EEC)	7.8
	Remnant native vegetation	19.7
Jilliby SCA	Funding to OEH for conservation projects in Jilliby SCA	\$25,000 per annum whenever coal is being extracted within Jilliby SCA

Note: To identify the areas referred to in Table 7 refer to the applicable figures in Appendix 7.

Long Term Security of Offsets

16. Within 12 months of the commencement of construction of the surface facilities sites, unless the Director-General agrees otherwise, the Applicant shall make suitable arrangements to provide appropriate long term security for the land within the Biodiversity Offset Strategy identified in Table 7, to the satisfaction of the Director-General.

Note: In order of preference, mechanisms to provide appropriate long term security to the land within the Biodiversity Offset Strategy include incorporation into the nearby State Conservation Areas, Biobanking Agreement, or Voluntary Conservation Agreement.

Biodiversity Management Plan

17. The Applicant shall prepare and implement a Biodiversity Management Plan for the development to the satisfaction of the Director-General. This plan must:
- be prepared in consultation with OEH and NSW Fisheries, and be approved by the Director-General prior to the commencement of construction of the surface facilities sites;
 - describe how the implementation of the biodiversity offset strategy would be integrated with the overall rehabilitation of the site;
 - establish baseline data for the existing habitat in the offsite biodiversity offset area and on the site;
 - describe the short, medium, and long term measures that would be implemented to:
 - manage impacts of clearing vegetation, including pre-clearance surveys;
 - manage remnant vegetation and habitat in the offsite biodiversity offset area and on the site; and
 - implement the biodiversity offset strategy, including detailed performance and completion criteria;
 - include a seasonally-based program to monitor and report on the effectiveness of these measures, and progress against the detailed performance and completion criteria;
 - identify the potential risks to the successful implementation of the biodiversity offset strategy, and include a description of the contingency measures that would be implemented to mitigate these risks;
 - include a mechanism for the payment of the conservation funding component of the biodiversity offset strategy, to the satisfaction of OEH; and
 - include details of who would be responsible for monitoring, reviewing, and implementing the plan.

Conservation Bond

18. Within 6 months of the commencement of construction of the surface facilities sites, the Applicant shall lodge a conservation bond with the Department to ensure that the biodiversity offset strategy is implemented in accordance with the performance and completion criteria described in the Biodiversity Management Plan.

The sum of the bond shall be determined by:

- calculating the full cost of implementing the offset strategy (other than land acquisition costs); and
- employing a suitably qualified quantity surveyor to verify the calculated costs.

If the offset strategy is completed generally in accordance with the completion criteria in the Biodiversity Management Plan to the satisfaction of the Director-General, the Director-General will release the bond.

If the offset strategy is not completed generally in accordance with the completion criteria in the Biodiversity Management Plan, the Director-General will call in all or part of the conservation bond, and arrange for the satisfactory completion of the relevant works.

HERITAGE**Aboriginal Cultural Heritage Management Plan**

19. The Applicant shall prepare and implement an Aboriginal Cultural Heritage Management Plan for the project, for all areas that are not, or will not, be subject to **condition 4 of Schedule 3**, to the satisfaction of the Director-General. This plan must:
- (a) be prepared in consultation with OEH and the Aboriginal community;
 - (b) be approved by the Director-General prior to commencement of construction of the surface facilities sites;
 - (c) identify any actions required to ensure that the performance measures in Table 1 are met;
 - (d) include the following program/procedures for Aboriginal cultural heritage management:
 - managing Aboriginal cultural heritage sites, and the discovery of any new Aboriginal cultural heritage sites, objects or skeletal remains;
 - maintaining consultation with, and the involvement of, the Aboriginal community in the conservation and management of Aboriginal heritage sites, and managing access for the Aboriginal community to Aboriginal heritage sites and culturally significant areas; and
 - a trigger action response plan to manage unexpected subsidence impacts.

TRANSPORT**Monitoring of Coal Transport**

20. The Applicant shall:
- (a) keep accurate records of the amount of coal transported from the site (on a daily basis); and
 - (b) make these records publicly available on its website at the end of each financial year.

Traffic Management Plan

21. The Applicant shall prepare and implement a Traffic Management Plan for the development to the satisfaction of the Director-General. This plan must be prepared in consultation with the RMS, WSC and TINSW, and be submitted to the Director-General for approval prior to the commencement of construction of the surface facilities sites.

VISUAL**Visual Amenity and Lighting**

22. The Applicant shall:
- a) minimise the visual impacts, and particularly the off-site lighting impacts, of the surface facilities sites;
 - b) take all practicable measures to further reduce visual impacts from the development, including:
 - screen planting along Hue Hue Road;
 - other appropriate visual impact mitigation measures for private residences within 2 kilometres, and with direct views, of the Tooheys Road Site; and
 - c) ensure that all external lighting associated with the development complies with *Australian Standard AS4282 (INT) 1995 - Control of Obtrusive Effects of Outdoor Lighting*, to the satisfaction of the Director-General.

WASTE

23. The Applicant shall
- (a) minimise and monitor the waste generated by the project;
 - (b) ensure that the waste generated by the project is appropriately stored, handled and disposed of;
 - (c) manage on-site sewage treatment and disposal in accordance with the requirements of Council; and
 - (d) report on waste management and minimisation in the Annual Review, to the satisfaction of the Director-General.

BUSHFIRE MANAGEMENT

24. The Applicant shall:
- (a) ensure that the project is suitably equipped to respond to fires on site; and
 - (b) assist the Rural Fire Service and emergency services as much as possible if there is a fire in the vicinity of the site.

REHABILITATION**Rehabilitation Objectives**

25. The Applicant shall rehabilitate the site to the satisfaction of the Executive Director Mineral Resources. This rehabilitation must be generally consistent with the proposed rehabilitation strategy described in the EIS and the PPR, and comply with the objectives in Table 8.

Table 8: Rehabilitation Objectives

Feature	Objective
Mine site (as a whole)	Safe, stable & non-polluting
Surface facilities sites	<ul style="list-style-type: none"> • To be decommissioned and removed, unless the Executive Director Mineral Resources agrees otherwise • Sites to be made safe, and hydraulically and geotechnically stable • Site to be revegetated with suitable local native plant species, and a landform consistent with the surrounding environment
All watercourses subject to subsidence impacts	<ul style="list-style-type: none"> • Hydraulically and geomorphologically stable, with riparian vegetation that is the same or better than prior to mining
Steep slopes and rock face features	No additional risk to public safety compared to prior to mining
Built features damaged by mining operations	Repair to pre-mining condition or equivalent unless the owner agrees otherwise, or the damage is fully restored, repaired or compensated for under the <i>Mine Subsidence Compensation Act 1961</i>
Community	<ul style="list-style-type: none"> • Ensure public safety • Minimise the adverse socio-economic effects associated with mine closure

Note: These rehabilitation objectives apply to all subsidence impacts and environmental consequences caused by all underground mining in the development area.

Progressive Rehabilitation

26. The Applicant shall carry out the rehabilitation of the site progressively, that is, as soon as reasonably practicable following disturbance.

Rehabilitation Management Plan

27. The Applicant shall prepare and implement shall prepare and implement a Rehabilitation Management Plan for the project, in consultation with OEH, NOW, WCC, and the CCC, and to the satisfaction of the Director-General and the Executive Director Mineral Resources. This plan must:
- (a) be submitted to the Director-General and the Executive Director Mineral Resources for approval within 12 months of the date of this consent;
 - (b) be prepared in accordance with any relevant DRE guideline and be consistent with the rehabilitation objectives in the EIS and in Table 8;
 - (c) describe how the performance of the rehabilitation would be monitored and assessed against the objectives in Table 8;
 - (d) describe the process whereby additional measures would be identified and implemented to ensure the rehabilitation objectives are achieved;
 - (e) provide for detailed mine closure planning, including measures to minimise socio-economic effects due to mine closure, to be conducted prior to the site being placed on care and maintenance; and
 - (f) be integrated with the other management plans required under this consent.

Note: The Rehabilitation Management Plan should address all land impacted by the development, whether prior to or following the date of this consent.

SCHEDULE 5**ADDITIONAL PROCEDURES****NOTIFICATION OF LANDOWNERS**

1. As soon as practicable after obtaining monitoring results showing:
 - (a) an exceedance of any relevant criteria in Schedule 4, the Applicant shall notify affected landowners in writing of the exceedance, and provide regular monitoring results to each affected landowner until the development is again complying with the relevant criteria; and
 - (b) an exceedance of any relevant air quality criteria in Schedule 4, the Applicant shall send a copy of the NSW Health fact sheet entitled "Mine Dust and You" (as may be updated from time to time) to the affected landowners and/or existing tenants of the land (including the tenants of any mine-owned land).

INDEPENDENT REVIEW

2. If an owner of privately-owned land considers the development to be exceeding the relevant criteria in Schedule 4, then he/she may ask the Director-General in writing for an independent review of the impacts of the development on his/her land.

If the Director-General is satisfied that an independent review is warranted, then within 2 months of the Director-General's decision the Applicant shall:

- (a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Director-General, to:
 - (i) consult with the landowner to determine his/her concerns;
 - (ii) conduct monitoring to determine whether the development is complying with the relevant criteria in Schedule 4; and
 - (iii) if the development is not complying with these criteria then identify the measures that could be implemented to ensure compliance with the relevant criteria; and
 - (b) give the Director-General and landowner a copy of the independent review.
-

SCHEDULE 6

ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING

ENVIRONMENTAL MANAGEMENT

Environmental Management Strategy

1. The Applicant shall prepare and implement an Environmental Management Strategy for the development to the satisfaction of the Director-General. This strategy must:
 - (a) be submitted to the Director-General for approval prior to the commencement of the construction of the New Pit-Top;
 - (b) provide the strategic framework for environmental management of the development;
 - (c) identify the statutory approvals that apply to the development;
 - (d) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the development;
 - (e) describe the procedures that would be implemented to:
 - (i) keep the local community and relevant agencies informed about the operation and environmental performance of the development;
 - (ii) receive, handle, respond to, and record complaints;
 - (iii) resolve any disputes that may arise during the course of the development;
 - (iv) respond to any non-compliance;
 - (v) respond to emergencies; and
 - (f) include:
 - (i) copies of any strategies, plans and programs approved under the conditions of this consent; and
 - (ii) a clear plan depicting all the monitoring required to be carried out under the conditions of this consent.

Management Plan Requirements

2. The Applicant shall ensure that the management plans required under this consent are prepared in accordance with any relevant guidelines, and include:
 - (a) detailed baseline data;
 - (b) a description of:
 - (i) the relevant statutory requirements (including any relevant approval, licence or lease conditions);
 - (ii) any relevant limits or performance measures/criteria;
 - (iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;
 - (c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;
 - (d) a program to monitor and report on the:
 - (i) impacts and environmental performance of the development;
 - (ii) effectiveness of any management measures (see c above);
 - (e) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;
 - (f) a program to investigate and implement ways to improve the environmental performance of the development over time;
 - (g) a protocol for managing and reporting any:
 - (i) incidents;
 - (ii) complaints;
 - (iii) non-compliances with statutory requirements; and
 - (iv) exceedances of the impact assessment criteria and/or performance criteria; and
 - (h) a protocol for periodic review of the plan.

Note: The Director-General may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.

Adaptive Management

3. The Applicant must assess and manage development-related risks to ensure that there are no exceedances of the criteria and/or performance measures in Schedules 3 and 4. Any exceedance of these criteria and/or performance measures constitutes a breach of this consent and may be subject to penalty or offence provisions under the EP&A Act or EP&A Regulation.

Where any exceedance of these criteria and/or performance measures has occurred, the Applicant must, at the earliest opportunity:

- (a) take all reasonable and feasible steps to ensure that the exceedance ceases and does not recur;
- (b) consider all reasonable and feasible options for remediation (where relevant) and submit a report to the Department describing those options and any preferred remediation measures or other course of action; and
- (c) implement remediation measures as directed by the Director-General, to the satisfaction of the Director-General.

Annual Review

4. By the end of March each year, or other timing as may be agreed by the Director-General, the Applicant shall review the environmental performance of the development to the satisfaction of the Director-General. This review must:
 - (a) describe the development (including any rehabilitation) that was carried out in the past financial year, and the development that is proposed to be carried out over the next year;
 - (b) include a comprehensive review of the monitoring results and complaints records of the development over the past financial year, which includes a comparison of these results against the:
 - (i) relevant statutory requirements, limits or performance measures/criteria;
 - (ii) requirements of any plan or program required under this consent;
 - (iii) monitoring results of previous years; and
 - (iv) relevant predictions in the EIS;
 - (c) identify any non-compliance over the past financial year, and describe what actions were (or are being) taken to ensure compliance;
 - (d) identify any trends in the monitoring data over the life of the development;
 - (e) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and
 - (f) describe what measures will be implemented over the current financial year to improve the environmental performance of the development.

Revision of Strategies, Plans and Programs

5. Within 3 months of:
 - (a) the submission of an annual review under Condition 4 above;
 - (b) the submission of an incident report under Condition 7 below;
 - (c) the submission of an audit report under Condition 9 below; or
 - (d) any modification to the conditions of this consent, (unless the conditions require otherwise),
 the Applicant shall review, and if necessary revise, the strategies, plans, and programs required under this consent to the satisfaction of the Director-General.

Note: This is to ensure the strategies, plans and programs are updated on a regular basis, and incorporate any recommended measures to improve the environmental performance of the development.

Community Consultative Committee

6. The Applicant shall continue to operate a Community Consultative Committee (CCC) for the development to the satisfaction of the Director-General. This CCC must be operated in general accordance with the *Guidelines for Establishing and Operating Community Consultative Committees for Mining Developments* (Department of Planning, 2007, or its latest version).

Notes:

- *The CCC is an advisory committee. The Department and other relevant agencies are responsible for ensuring that the Applicant complies with this consent.*
- *In accordance with the guideline, the Committee should be comprised of an independent chair and appropriate representation from the Applicant, Council, recognised environmental groups and the local community.*
- *In operating the CCC, the Department will accept the continued representation from existing CCC members.*

REPORTING

Incident Reporting

7. The Applicant shall notify, at the earliest opportunity, the Director-General and any other relevant agencies of any incident that has caused, or threatens to cause, material harm to the environment. For any other incident associated with the development, the Applicant shall notify the Director-General and any other relevant agencies as soon as practicable after the Applicant becomes aware of the incident. Within 7 days

of the date of the incident, the Applicant shall provide the Director-General and any relevant agencies with a detailed report on the incident, and such further reports as may be requested.

Regular Reporting

8. The Applicant shall provide regular reporting on the environmental performance of the development on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of this consent.

INDEPENDENT ENVIRONMENTAL AUDIT

9. Within 12 months of the commencement of construction of the New Pit-Top, and every 3 years thereafter, unless the Director-General directs otherwise, the Applicant shall commission and pay the full cost of an Independent Environmental Audit of the development. This audit must:
 - (a) be conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Director-General;
 - (b) include consultation with the relevant agencies;
 - (c) assess the environmental performance of the development and assess whether it is complying with the requirements in this consent and any relevant EPL or Mining Lease (including any assessment, plan or program required under these approvals);
 - (d) review the adequacy of strategies, plans or programs required under the abovementioned approvals; and
 - (e) recommend appropriate measures or actions to improve the environmental performance of the development, and/or any assessment, plan or program required under the abovementioned approvals.

Note: This audit team must be led by a suitably qualified auditor and include experts in any field specified by the Director-General.

10. Within 6 weeks of the completion of this audit, or as otherwise agreed by the Director-General, the Applicant shall submit a copy of the audit report to the Director-General, together with its response to any recommendations contained in the audit report.

ACCESS TO INFORMATION

11. Within 6 months of the date of this consent, the Applicant shall:
 - (a) make copies of the following publicly available on its website:
 - (i) the documents referred to in Condition 2 of Schedule 2;
 - (ii) all current statutory approvals for the development;
 - (iii) all approved strategies, plans and programs required under the conditions of this consent;
 - (iv) a comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of this consent, or any approved plans and programs;
 - (v) a complaints register, updated monthly;
 - (vi) minutes of CCC meetings;
 - (vii) the annual reviews of the development;
 - (viii) any independent environmental audit of the development, and the Applicant's response to the recommendations in any audit;
 - (ix) any other matter required by the Director-General; and
 - (b) keep this information up-to-date, to the satisfaction of the Director-General.

APPENDIX 1: SCHEDULE OF LAND

APPENDIX 2: DEVELOPMENT AREA

APPENDIX 3: DEVELOPMENT LAYOUT

APPENDIX 4: HERITAGE SITES

Table 1: Aboriginal Heritage Sites

Site	Description
WC-OS2	Open site (artefact scatter including flakes, cores and chips)
WSF-AG3	Axe grinding groove site
WSF-AG4	Axe grinding groove site
45-3-3040	Axe grinding groove site
45-3-3041	Axe grinding groove site
45-3-3042	Axe grinding groove site

Table 2: Historic Heritage Sites

Site	Description
1	Brick & Iron Silo
2	Dwelling "Bangalow"
K	Dwelling
M	Little Jiliby Road

APPENDIX 5: NOISE ASSESSMENT**Applicable Meteorological Conditions**

1. The noise criteria in Tables 5 and 7 are to apply under all meteorological conditions except the following:
 - (a) during periods of rain or hail;
 - (b) average wind speed at microphone height exceeds 5 m/s;
 - (c) wind speeds greater than 3 m/s measured at 10 m above ground level; or
 - (d) temperature inversion conditions greater than 3°C/100 m.

Determination of Meteorological Conditions

2. Except for wind speed at microphone height, the data to be used for determining meteorological conditions shall be that recorded by the meteorological station located on the site.

Compliance Monitoring

3. Attended monitoring is to be used to evaluate compliance with the relevant conditions of this approval.
4. Unless otherwise agreed with the Director-General, this monitoring is to be carried out in accordance with the relevant requirements for reviewing performance set out in the *NSW Industrial Noise Policy* (as amended from time to time), in particular the requirements relating to:
 - (a) monitoring locations for the collection of representative noise data;
 - (b) meteorological conditions during which collection of noise data is not appropriate;
 - (c) equipment used to collect noise data, and conformity with Australian Standards relevant to such equipment; and
 - (d) modifications to noise data collected, including for the exclusion of extraneous noise and/or penalties for modifying factors apart from adjustments for duration.

APPENDIX 6: NOISE RECEIVER LOCATIONS

APPENDIX 7: OFFSET AREAS

VOLUNTARY PLANNING AGREEMENT

WYONG SHIRE COUNCIL

AND

WYONG COAL PTY LIMITED

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PLANNING AGREEMENT

DATE

PARTIES

Wyong Shire Council of Council Chambers, Hely Street Wyong in the State of New South Wales ("**WSC**")

and

Wyong Coal Pty Limited – ABN 90 074 778 699
of 25 Bryant Drive, TUGGERAH NSW 2259 ("**WCPL**")

BACKGROUND (RECITALS)

- A. WCPL proposes to establish a mine to extract up to 5 million tonnes per annum of export quality thermal coal for a period of 28 years.
- B. WCPL has lodged Development Application No. SSD-4974 under Part 4 Division 4.1 of the Act for development consent to the coal mine.
- C. WCPL acknowledges that the Minister and not WSC is the consent authority for the proposed development and that WSC has made a submission to the NSW Department of Planning and Infrastructure opposing the application.
- D. WCPL has approached WSC to enter into a VPA proposing to provide contributions towards environmental and community enhancement programs.
- E. WCPL proposes this draft Voluntary Planning Agreement (VPA) on the understanding that WSC will be required to formally consider the draft VPA and endorse it for public exhibition and then further consider it for execution if appropriate.
- F. Nothing in this Agreement is to be construed as limiting or fettering in any way the exercise of any statutory discretion or duty by WSC.

OPERATIVE PROVISIONS

1. DEFINITIONS AND INTERPRETATION

1.1. In this Agreement the following definitions apply:

Act means the *Environmental Planning and Assessment Act 1979* (NSW).

Approval means any certificate, licence, consent, permit, approval or other requirement of any Authority having jurisdiction in connection with the activities contemplated by this Agreement including without limitation any approval required under the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)*, roads related approvals, consents or steps by a regulatory authority, receipt of required water licences, approval of any consent or approval required for any biodiversity conservation related instrument or other plan or approval contemplated in any Approval.

Arbitrator means an arbitrator appointed by the nominee of the head of the Australian Commercial Disputes Centre at the request of either party.

Authority means any government, semi-governmental, statutory, administrative, fiscal or judicial body, department, commission, authority, tribunal, public or other person.

Consent means any consent to Development Application No. SSD-4974 made under the Act.

Contributions means the monetary contributions and activities specified at clause 5 of this Agreement.

Council means Wyong Shire Council or its representatives or assigns.

CPI-A means, for the purposes of Schedule 1 of this Agreement, the most recent Consumer Price Index (All Groups, Sydney) published by the Australian Bureau of Statistics at the time of this Agreement

CPI-B means, for the purposes of Schedule 1 of this Agreement, the most recent Consumer Price Index (All Groups, Sydney) published by the Australian Bureau of Statistics at the time a developer contribution is paid to Council

Dispute means any dispute as to the meaning, performance, subject matter, breach or termination of this agreement or any issue which arises out of this agreement whatsoever.

Land means the land subject to Development Application No. SSD-4974 made under the Act.

Law means:

- (a) any law applicable including legislation, ordinances, regulations by-laws and other subordinate legislation; and
- (b) any Approval, including any condition or requirement under it.

Life of the Project means the period from the grant of any Consent to the end date of any such Consent and/or Mining Lease related to that consent.

Parties means the Council and WCPL, including both their successors and assigns.

Party means a party to this Agreement including its successors and assigns.

Project means the development permitted by the Consent.

WCPL means Wyong Coal Pty Ltd (ABN 90 074 778 699)

WSC means Wyong Shire Council or its representatives or assigns.

2. PLANNING AGREEMENT UNDER THE ACT

The parties agree that this Agreement is a Planning Agreement governed by Subdivision 2 of Division 6 of Part 4 of the Act.

3. APPLICATION OF THIS AGREEMENT

This Agreement applies to the Consent and to the Land.

4. OPERATION OF THIS AGREEMENT

4.1. This agreement is subject to the following conditions precedent:

- a Consent is granted with conditions satisfactory to WCPL;
- b All other Approvals, licences, permits, consents or other authorisations necessary for the Project being received on conditions which meet WCPL approval;
- c Expiry of any relevant appeal periods; and
- d WCPL has made a final decision to physically construct the Project,

and no payments shall be due or payable until all conditions precedent provided for in this clause have been met.

4.2. This Agreement excludes the application of s.94, s94a and s94EF of the Act to the Project and WSC agrees that it will not seek payment of any monies, other than the payment of monies under this Agreement, on account of matters provided for or referred to in section 94 of the Act for the duration of this agreement in respect of the Project.

4.3. This agreement also excludes water and sewerage contributions levied under s.306 of the *Water Management Act 2000*.

4.4. This Agreement terminates on:

- (a) a declaration by a Court of competent jurisdiction that the Consent or any other Approval granted for the Project is invalid; or
- (b) if any Consent or other Approval granted for the Project ceases for any reason to operate.

- 4.5. If a Consent or other Approval granted for the Project is declared to be invalid and a new Approval is granted in respect of the Project, then WSC agrees to credit payment of the Contributions paid under this Agreement against any contributions required under the new Approval. If no new Approval is granted then no credit will be provided.
- 4.6. If this Agreement terminates pursuant to clause 4.4, clause 4.5 survives termination of the Agreement.
- 4.7. This Agreement terminates at the end of the Life of the Project.

5. CONTRIBUTIONS TO THE COMMUNITY ENHANCEMENT PROGRAM

- 5.1. WCPL will make the Contributions as set out in Schedule 1 of this Agreement.
- 5.2. Where a Contribution may be made by either payment of money or by the carrying out of works in kind (as stipulated in Schedule 1) the parties will endeavour (in good faith) to agree whether the Contribution is made by WCPL carrying out work in kind or paying money. If agreement cannot be reached under this clause then WCPL must carry out works in kind. If WCPL is unable to carry out any particular element of works in kind due to a matter beyond its reasonable control then WCPL may serve notice of dispute under clause 10 of this agreement and the manner of satisfaction of WCPL's obligation shall be determined in accordance with the provisions of clause 10.
- 5.3. Any Contribution that is a monetary contribution will be taken to have been made under this Agreement when payment is made to WSC by bank cheque or by electronic funds transfer into a bank account nominated by the WSC.
- 5.4. Any Contribution that is to be made by the provision of works in kind will be taken to have been made when the relevant works have been fully completed in accordance with any contract applying to the works.
- 5.5. For works carried out in kind, WCPL will be solely responsible for gaining access to property and negotiating and creating property rights in favour of WSC (such as easements) which support and provide for the construction, operation and maintenance of infrastructure or things which will or are proposed to become owned by or the property of WSC. WSC undertake to assist WCPL in securing any easements over privately owned lands where the easement is necessary for the construction of infrastructure that is to be dedicated to WSC upon completion.

6. OFFSET LANDS

- 6.1. WCPL agrees to appoint WSC as the manager of specific Offset Lands, subject to the Office of Environment and Heritage and relevant officers and Minister(s) under the *Threatened Species Conservation Act 1995*, *Environmental Protection and Biodiversity Conservation Act 1999* (Cth), the Act or their replacement from time to time and any other Authority with jurisdiction or interest in the Offset Lands and their preservation and/or management in connection with offsetting the impacts of the Project, approving the proposed management agreement and approving the arrangements proposed by WCPL for conservation or preservation of the Offset Lands and other arrangements required under the Consent.
- 6.2. The terms of WSC's appointment will be such as, in WCPL's reasonable opinion, are necessary to fully and faithfully implement the requirements and purpose of the

Consent or any Approval in respect of the Offset Lands and/or the Project. It is acknowledged that the terms of any appointment will include commitments by WSC, at its cost, to be bound by management plans and the requirements of the Consent from time to time.

- 6.3. No agreement or arrangement relating to the management of biodiversity offset lands will be of any force or effect where the agreement or arrangement adversely impacts on WCPL's Consent.
- 6.4. WSC may, at its absolute discretion, elect not to enter into an agreement or arrangement for the management of Offset Lands in which case Clause 6 does not apply.

7. DIRECT EMPLOYMENT

WCPL will use all reasonable endeavours to sponsor one Engineering Scholarship and employ two Apprentice positions per year for the Life of the Project. Apprentices employed in satisfaction of this clause must, as at the date of commencement of the Apprenticeship, be resident within the Wyong Shire.

8. PUBLIC PURPOSES AND ACCOUNTABILITY FOR EXPENDITURE

- 8.1. The Contributions must be used for the public purposes set out in Schedule 1 within a reasonable time of receipt of payment.
- 8.2. Within 10 Business Days of publishing its annual report required under section 93G(5) of the Act, WSC must provide directly to WCPL details of the expenditure of the Contributions payable under items 1, 2, 3, 5 and 6 of Schedule 1 in accordance with clause 8.1 during the relevant year.
- 8.3. WSC must provide directly to WCPL details of the disbursement of Contributions payable under items 4 and 7 of Schedule 1 in accordance with clause 8.1 at the appropriate time.
- 8.4. As adjoining landowners the parties agree to work collaboratively in good faith to investigate any potential mutual cost savings measures in regard to infrastructure augmentation and relocation.

9. REVIEW OF THIS AGREEMENT

Any amendments, variation or modification to or of, or consent to any departure by any party from the terms of this Agreement shall have no force or effect unless effected by a document executed by the parties which complies with the requirements of Section 93G of the Act.

10. DISPUTE RESOLUTION AND ENFORCEMENT

- 10.1. In the event of a Dispute arising neither party will commence any proceedings in any court.
- 10.2. If a Dispute arises (in the opinion of either party) then either party may service notice of Dispute on the other setting out the nature of the Dispute and its understanding of the position of each party in respect of that Dispute (a **Dispute Notice**).
- 10.3. The recipient of a Dispute Notice must respond to a Dispute Notice with its version of the position of each party in respect of the Dispute within seven (7) days of receipt of the Dispute Notice (**Response**).
- 10.4. The General Manager of WSC and Managing Director of WCPL must meet within seven (7) days of the Response to discuss and endeavour in good faith to resolve the Dispute.
- 10.5. If the Dispute is not resolved within thirty (30) days of the Response then either party may refer the Dispute to an Arbitrator in which case both parties must comply with the Arbitrator's imposed process which will accord with Part 5 of the *Commercial Arbitration Act 2010*.
- 10.6. This is an arbitration agreement under and subject to the provisions of the *Commercial Arbitration Act 2010*.
- 10.7. The parties agree to be bound by the determination(s) of the Arbitrator, unless within 14 days of receiving the determination, a party gives written notice to the other party that it does not agree with the determination and commences litigation.,

11. COSTS

Each party will pay its own costs in relation to the negotiation, preparation and execution of this Agreement.

12. NOTICES

- 12.1. Any notice, consent, information, application or request that must or may be given or made to a Party under this Agreement is only given or made if it is in writing and sent in one of the following ways:
 - (a) Delivered or posted to that Party at its address set out in (b) below.
 - (b) Faxed or emailed to that Party at the relevant details set out below.
 - (i) Council: Wyong Shire Council
Attention: General Manager
Address: DX 7306, WYONG
Fax No: (02) 4350 2098
Email: wsc@wyong.nsw.gov.au
 - (ii) WCPL: Wyong Coal Pty Limited
Attention: Project Manager
Address: PO Box 3039 TUGGERAH NSW 2259
Fax No: (02) 4352 7599
Email: admin@wallarah.com.au

- 12.2. If a party gives the other party 3 working days notice of a change of its address or fax number, any notice, consent, information, application or request is only given or made by that other party if it is delivered, posted or faxed to the latest address or fax number.
- 12.3. Any notice, consent, information, application or request is to be treated or given or made at the following time:
- (a) If it is delivered, when it is left at the relevant address.
 - (b) If it is sent by post, 2 working days after it is posted.
 - (c) If it is sent by fax, as soon as the sender receives from the sender's fax machine a report of an error free transmission to the correct fax number.
- 12.4. If any notice, consent, information, application or request is delivered, or an error free transmission report in relation to it is received, on a day that is not a business day, or if it is on a business day, after 5.00pm on that day in the place of the party to whom it is sent, it is to be treated as having been given or made at the beginning of the next business day.

13. ENTIRE AGREEMENT

This Agreement contains everything to which the parties have agreed in relation to the matters it deals with. No party can rely on an earlier document, or anything said or done by another party, or by a director, officer, agent or employee of that party before this Agreement was executed, except as permitted by law.

14. NEW LEGISLATION

- 14.1. If a Law is changed or a new Law comes into force (both referred to as **New Law**) and WCPL is obliged by the New Law to do something or pay an additional amount for a purpose which it is already contractually obligated to do or pay under this Agreement then, to the extent only that the relevant obligation is required under both the New Law and this Agreement, compliance with this Agreement will constitute compliance with the New Law and compliance with the New Law will constitute compliance with this Agreement.
- 14.2. If there is any doubt as to whether compliance with this Agreement will constitute compliance with the New Law, WCPL will pay such amounts required under the New Law and the WSC agrees that such payments will act as a credit with respect to any future payments required under this Agreement so that the aggregate amount (as set out in the schedule 1) WCPL has paid or will pay under this Agreement is not exceeded.

15. FURTHER ACTS

Each Party agrees to promptly execute all documents and do all such things that another Party from time to time reasonably requests to affect, perfect or complete this Agreement and all transactions incidental to it.

16. GOVERNING LAW AND JURISDICTION

This Agreement is governed by the law of New South Wales, Australia. The parties submit to the non-exclusive jurisdiction of its Courts and Courts of appeal from them. The parties will not object to the exercise of jurisdiction by those Courts on any basis provided that the dispute resolution provisions in clause 10 of this Agreement have first been satisfied.

17. NO FETTER

Nothing in this Agreement is to be construed as requiring WSC or the Minister to do anything that would cause it to be in breach of any of its obligations at law, and without limitation, nothing is to be construed as limiting or fettering in any way the exercise of any statutory discretion or duty if that is not permitted by law.

18. SEVERABILITY

If a clause or part of a clause in this Agreement can be read in a way that makes it illegal, unenforceable or invalid, but can also be read in a way that makes it legal, enforceable and valid, it must be read in the latter way. If any clause or part of a clause is illegal, unenforceable or invalid, that clause or part is to be treated as removed from this Agreement, but the rest of the Agreement is not affected.

19. WAIVER

The fact that a Party fails to do, or delays in doing, something the Party is entitled to do under this Agreement, does not amount to a waiver of any obligation of, or breach of obligation by, another Party. A waiver by a Party is only effective if it is in writing. A written waiver by a Party is only effective in relation to the particular obligation or breach in respect of which it is given. It is not to be taken as an implied waiver of any other obligation or breach or as an implied waiver of that obligation or breach in relation to any other occasion.

EXECUTED as a Voluntary Planning Agreement

Date:

The Common Seal of WYONG SHIRE COUNCIL was hereunto affixed on the day of 20 pursuant to a resolution of the Council made on the day of 20 :

General Manager

Mayor

Name [BLOCK LETTERS]

Name [BLOCK LETTERS]

Executed for and on behalf of Wyong Coal Pty Ltd in accordance with section 127(1) of the Corporations Act:

Director/Secretary [if not Sole Director]

Director/Sole Director

Name [BLOCK LETTERS]

Name [BLOCK LETTERS]

SCHEDULE 1 (Contributions Schedule)**Development Contribution and Timing of Payments**

Voluntary Planning Agreement

Wyong Shire Council and Wyong Coal Pty Limited

Item No.	Contributions	Intended Use / Public Purpose	Timing/Payment details
1	<p>Works In Kind to complete the whole of the subject works OR,</p> <p>Monetary Contribution: \$4,000,000 minus the value of any Works In Kind to partially complete the subject works.</p>	Tooheys Road upgrade - to reconstruct the entire length to a sealed road standard (Commercial & Industrial "Other" Table 7.2 and other related requirements of the Wyong Shire Council Civil Works Design Guide) including an access intersection layout as shown in Figure 7.1 on page 112, Wallarah 2 Coal Project EIS – Appendix Q Traffic & Transport Impact Assessment.	In the case where a monetary contribution has been agreed by WSC, prior to the physical commencement of construction works for the development at the Tooheys Rd site.
2	<p>Works In Kind to complete the whole of the subject works OR,</p> <p>Monetary Contribution: \$700,000 minus the value of any Works In Kind to partially complete the subject works.</p>	Buttonderry access intersection upgrade as shown in Figure 7.2 on page 113, Wallarah 2 Coal Project EIS – Appendix Q Traffic & Transport Impact Assessment.	In the case where a monetary contribution has been agreed by WSC, prior to the physical commencement of construction works for the development at the Buttonderry site.
3	<p>Works In Kind to complete the whole of the subject works OR,</p> <p>Monetary Contribution: \$1,404,000 minus the value of any Works In Kind to partially complete the subject works.</p>	Brothers Forest Road/Little Jilliby Road intersection upgrade and upgrade of Brother Forest Road from the Little Jilliby Road intersection to the Ventilation Shaft site access to sealed road standard (Commercial & Industrial "Other" Table 7.2 and other related requirements of the Wyong Shire Council Civil Works Design Guide) as shown in Figure 7.3 on page 114, Wallarah 2 Coal Project EIS – Appendix Q Traffic & Transport Impact Assessment.	In the case where a monetary contribution has been agreed by WSC, prior to the physical commencement of ventilation shaft construction works (Current projections Yr 10).

Item No.	Contributions	Intended Use / Public Purpose	Timing/Payment details
4	<p>Monetary Contribution: \$1,400,000 over the Life of the Project.</p>	<p>Contributions to ongoing road and public infrastructure affected by the proposed mine.</p>	<p>Payment on the following conditions:</p> <ul style="list-style-type: none"> a. Payments would equate to \$50,000 per year for 28 years or for the life of the proposed project. b. Initial payment to be made on the 12 month anniversary of the road works, upgrades and infrastructure payment and thereafter on each anniversary of that date. c. Payments will not be required during any period in which operations at the proposed mine are suspended, discontinued or abandoned (including any period in which the operation is kept on a care and maintenance basis) in accordance with the provisions of the Coal Mines Health and Safety Act 2002 and associated regulations.
5	<p>Works In Kind to complete the whole of the subject works OR,</p> <p>Monetary Contributions: \$3,170,000 minus the value of any Works In Kind to partially complete the subject works.</p>	<p>Provision of water infrastructure to the Buttonderry and Tooheys Road sites.</p>	<p>In the case where a monetary contribution has been agreed by WSC:</p> <ul style="list-style-type: none"> a. \$1,000,000 for water supply to Buttonderry site b. \$2,170,000 for water supply to Tooheys Rd site <p>Payment prior to completion of surface infrastructure as per accompanying plans "Water to Buttonderry" and "Water to Tooheys Rd" depicting proposed extent of works.</p>

Item No.	Contributions	Intended Use / Public Purpose	Timing/Payment details
6	<p>Works In Kind to complete the whole of the subject works OR,</p> <p>Monetary Contributions: \$2,300,000 minus the value of any Works In Kind to partially complete the subject works.</p>	Provision of sewerage infrastructure to the Buttonderry site.	In the case where a monetary contribution has been agreed by WSC, payment prior to completion of surface infrastructure as per accompanying plan "Sewer to Buttonderry" depicting proposed extent of works.
7	<p>Monetary Contribution Community and Environment: \$4,000,000.</p>	<p>Community, social and cultural development infrastructure projects</p> <p>Environmental improvement projects being undertaken by Council</p> <p>Enhancement of water reuse, trade waste capacity and sustainability programs</p>	<p>Payment on the following conditions:</p> <p>a. \$600,000 upon WCPL making a decision to physically construct the Project.</p> <p>b. \$500,000 upon the physical commencement of construction.</p> <p>c. \$1,000,000 upon the raling of first coal.</p> <p>d. \$1,900,000 upon the completion of Longwall 1</p>

GST: All dollar amounts in the above table are GST exclusive.

Works: All works in the above table which have been identified as the responsibility of WCPL to construct must be designed and constructed to WSC's satisfaction.

Indexation: All monetary amounts contained in the above table will be subject to indexation using the following formula:

$$\text{Amount to be paid} = \text{Contribution} \times (\text{CPI-B}/\text{CPI-A})$$

Where:

Contribution = the amount referred to in the above table.

CPI-A & CPI-B = as defined by this agreement

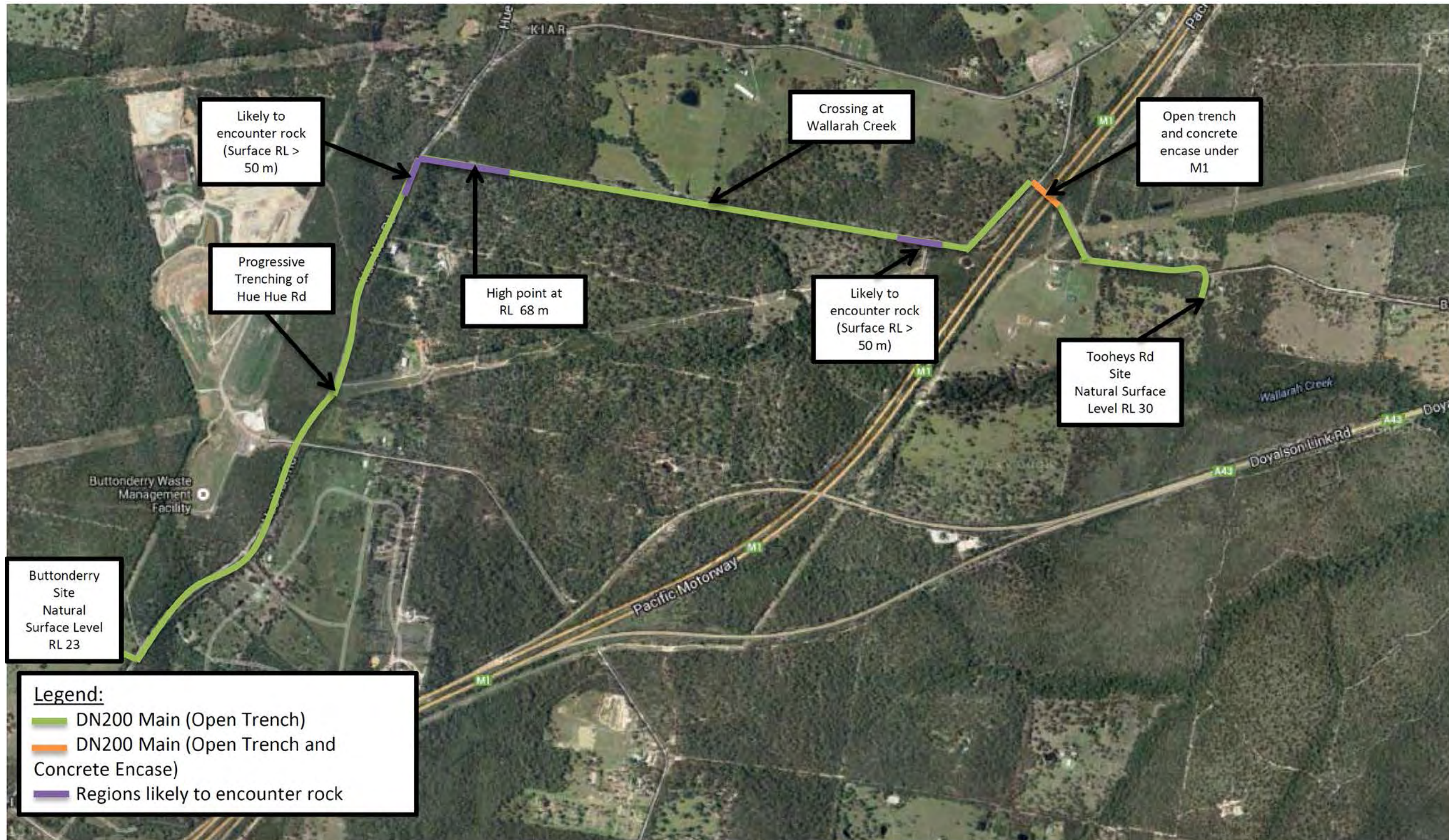
Water to Buttonderry

(This plan is indicative and may be subject to change upon final engineering design if agreed between parties)



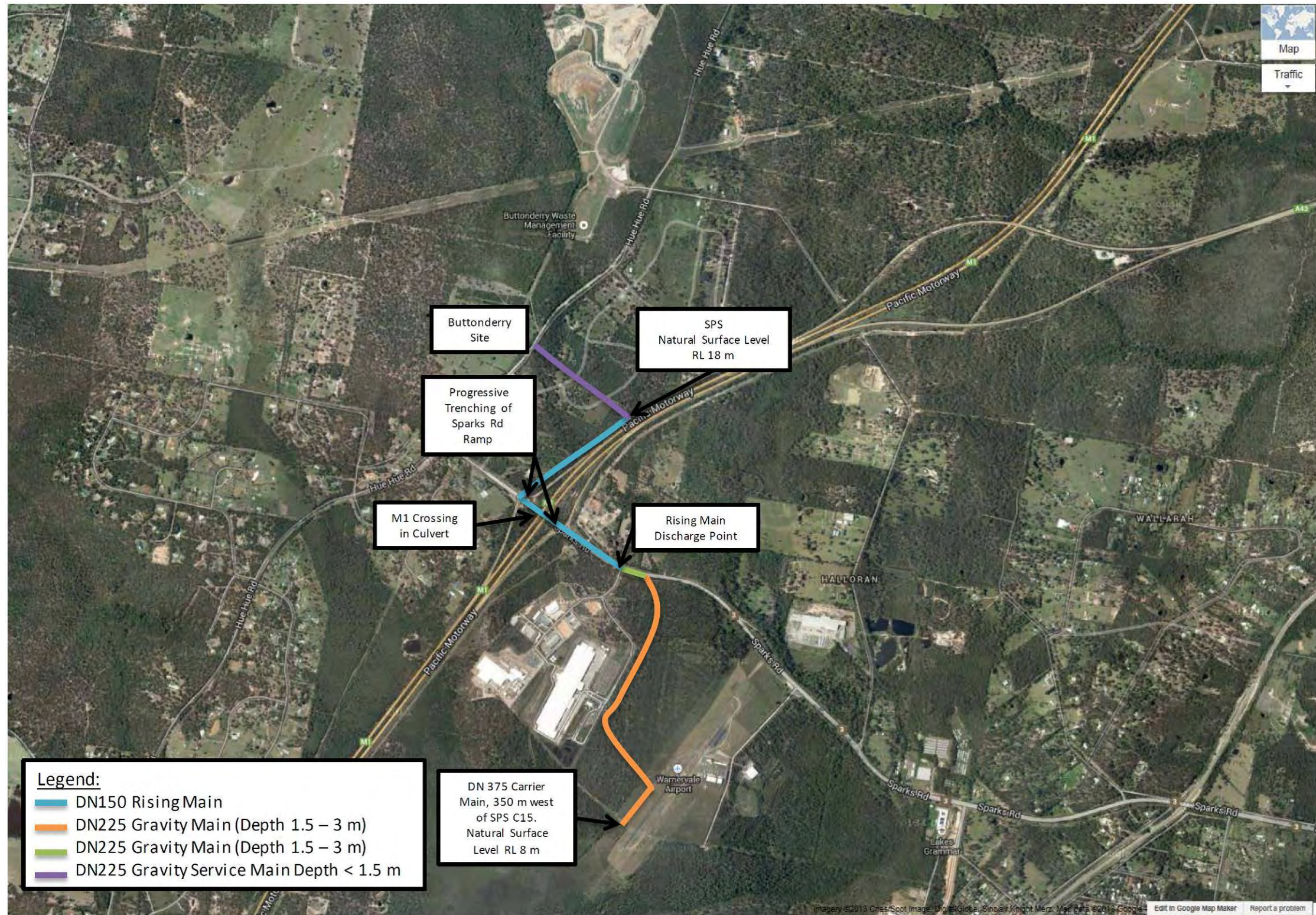
Water to Tooheys Rd

(This plan is indicative and may be subject to change upon final engineering design if agreed between parties)



Sewer to Buttonderry

(This plan is indicative and may be subject to change upon final engineering design if agreed between parties)



NO.	DOC. NO.	KEY ISSUE	SUBMISSION SUMMARY	COMMENTS
1	D06919596	OBJECT TO MINING	<p>Have first-hand experience with the damage caused by mining under residential buildings in Wyong Shire.</p> <p>Opposed to mining under the Water Supply Catchment.</p>	<p>Whilst Council does not support the establishment of the coal mine there is a need to address infrastructure costs, (including roads, sewer mains and water supply) should the approval be granted by the State Government.</p> <p>This infrastructure would be dedicated to Council upon completion and therefore Council must ensure that any VPA is structured in a manner which protects its interest.</p>
2	D06919596	SUPPORT VPA	Draft VPA looks good for Wyong Shire.	Noted
3	D06919596	OBJECT TO SUPPORTING VPA	<p>Object to Council supporting this VPA. Have first-hand experience with mines in the northern end of the Shire and see the environmental damage that has occurred over the last 40 years.</p> <p>There are VPA agreements with the mines in the north and not seen anything come from them to the community.</p>	Refer response to Submission No. 1
4	D06919596	OBJECT TO MINING	<p>Does not support exposing the Central Coast's water supply to pollutants for profit.</p> <p>Of greater concern is the exposure to coal dust...health studies have purported the negative effects of coal that occur through its mining, waste storage and transportation. Some of the negative effects include the reduction of life expectancy, respiratory hospital admissions, chronic bronchitis, asthmas attacks, osteoporosis, ataxia, renal dysfunction and ecosystem loss and degradation, with negative effects on health and quality of life.</p> <p>Further consideration must be given to the increased burden on road and rail infrastructure caused by the transportation of coal to Newcastle for export to Asia. Need to assist the residents of the northern areas of the Central Coast.</p> <p>Firmly opposed to the proposition and extremely disappointed in the NSW State Government for considering the matter.</p>	Refer response to Submission No. 1
5		INADEQUATE COMPENSATION FOR MINING	<p>Not supportive of the mine going ahead in a fragile landscape and in an urban growth area. If this is to proceed though there should be a meaningful contribution back to the environment and wider community.</p> <p>The proposed \$20 million in infrastructure funds to the community is inadequate given the value generated to an overseas owned coal company.</p> <p>The majority of these funds (\$16 million) are also used for building infrastructure that will directly support the mine. Whilst there will be some ability to use this infrastructure for future urban expansion this is NOT providing a benefit commensurate to the environmental or community impacts the mine will have locally.</p> <p>Further, the payments are not indexed and the meagre \$4 million is to be "paid in instalments at different stages of the proposed mine". This means no clear program, and probably no community benefit for many years until the mine is well established.</p> <p>Lastly, there is no compensation or mitigation for the environmental impacts in this agreement. This is in fact an opportunity to generate much needed funds to secure biodiversity corridors and reserves for the future at no cost to the public purse.</p> <p>I propose that a \$1.00 contribution per tonne of run of mine coal (ROM) be paid into a restricted fund annually. This would need to be indexed as well.</p> <p>This equates to 1.25% of the value of the coal produced - hardly imposes on a viable operation to mitigate in part the impacts on the local community.</p> <p>This would also generate an ongoing source of funds over the life of the mine, rather than a one off payment that may only benefit a small section of the community. This would also allow a</p>	<p>Refer response to Submission No. 1</p> <p>The VPA does provide for payments to be indexed.</p> <p>The suggestion of a \$1/tonne contribution was put to WCPL who responded as follows:</p> <p><i>In terms of the provision of funding for environmental projects, Schedule 1, Item 7 of the VPA provides for a \$4,000,000 monetary contribution for "Community and Environment", with an Intended Use/Public Purpose to address three elements inclusive of (1) Community, social and cultural development infrastructure projects, (2) Environmental improvement projects being undertaken by Council, and (3) Enhancement of water reuse, trade waste capacity and sustainability programs.</i></p> <p><i>It is important to note that no ratio or proportionality has been applied to the amount to be dedicated to these elements either together or in isolation, and as such the management of the funds and element into which they feed can be flexibly determined by Council as the need and opportunity arises.</i></p> <p><i>This VPA has exceeded industry standard in terms of monetary contributions for underground coal mines, and must be viewed in terms of the nexus between the size and type of operation and the impacts which are small when compared to Hunter Valley Open Cut mines.</i></p> <p><i>Note also that the W2CP Community Foundation Grants program which is currently entering into its second year, provides access to funds in support of programs and initiatives</i></p>

NO.	DOC. NO.	KEY ISSUE	SUBMISSION SUMMARY	COMMENTS
			<p>staged roll out of community benefits linked to the production levels of the mine and likely scale of impacts.</p> <p>This restricted fund should be managed by a committee made up of both councillors and community representatives and set up a program of community infrastructure and environmental acquisition/restoration works. This would create viable assets to be managed by the council for the benefit of the community.</p> <p>My suggestions is that the fund should be set up to specifically split funding to ensure benefit flows to a wide section of the community. An example of the split is given below:</p> <p>50% - general community infrastructure (halls, libraries, sports facilities, cultural facilities etc) 20% - purchase of natural assets and capital works in natural areas focussed on creating permanent biodiversity corridors 10% - cycleway construction and maintenance 10% - capital / operational grants program for registered sports clubs, social clubs, tidy towns, bush care etc 5% - non-sports based recreational assets such as walking trails, jetties, view platforms etc 5% - capital / operational grants program for volunteer emergency services providers including RFS, VRA, Marine Rescue etc</p> <p>Such a program, publicly administered over the life of the mine would provide a clear benefit to the vast majority of Wyong residents, encourage tourism and ensure transparency in the overall management of a "Wallarah 2 Community Benefit Fund".</p>	<p><i>which assist and benefit the environment and community, and that those grants, similar to the VPA are dedicated to application within the WSC local government area. In terms of other moneys paid to WSC, W2CP will pay significant rates (as mining land attracts higher premiums) in comparison to other landowners.</i></p> <p><i>In terms of Biodiversity, W2CP has demonstrably met its offset requirements and has dedicated areas set aside which are all contained upon land purchased by the project at considerable costs. However, an opportunity for WSC to manage those offset lands has been included in the VPA which can provide improved co-ordination and management of local biodiversity assets including adjoining land owned by WSC.</i></p>
6		OBJECTION TO COAL MINE	<p>Coal mining on the Central Coast will damage our Air, Land, Water and our Health. Mining companies like making a profit and they will do so at the risk to the community. Concern over the effect of coal dust or any waste products from mining. Council is in a position to protect our community and is not doing this if you allow coal mining or coal seam gas mining on our beautiful Central Coast, no matter how much is contributed. Don't allow the mine to go ahead on the central coast, if it does, the clean-up will have to be met by the community.</p> <p>The stated \$20 million in revenue is inadequate, they will never pay that. We can do way more with clean air, water, land and great health because we don't have a mine in our area.</p>	Refer response to Submission No. 1
7		OBJECTION TO COAL MINE	<p>Opposed to the coal mine proceeding. Would like responses from Council especially about Pollution, Water Contamination, Coal Dust Duty of Care to all in the areas especially children.</p>	Refer response to Submission No. 1
8		WEBLINK	<p>It would be helpful to have a hyperlink to the actual webpage and/or document rather than simply referring to Council's home page.</p>	Link was provided to Public Exhibition page which linked to the VPA.



OPERATIONAL PLAN 2013/14

WYONG SHIRE COUNCIL

Edith Ring Rest is a significant landmark on the Coast to Lake Walk

Q3

as at 31 March 2014

BUSINESS REPORT



Wyong
Shire
Council
CENTRAL COAST



Q3

Business Report 2013-14

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1. Overview

This document reports on Council's performance as measured against Wyong Shire Council's Strategic Plan for 2013-2017 and covers the period for the nine months ended 31 March 2014 (Q3).

The 2013-14 financial year is focused on Council's continued journey to achieve financial sustainability and improvements in asset management.

Council remains on target to deliver the current level of services to the community and has identified savings of \$3.5 million during this quarterly review to now forecast an improved full year operating surplus of \$1.2 million.

Council will continue to enhance its culture of cost containment and rigorous business planning to deliver valuable services to the community.

Progress on Principal Activities

Progress on Council's performance by Principal Activity is tracking well with 62% of projects and targets currently on track, 17% of projects and targets now complete, and 21% of projects and targets deferred or off track. Details of progress against each performance target are contained within the report.

Operating Result

The year to date (YTD) operating result (excluding capital grants and contributions) shows a favourable variance of \$5.8 million, consisting of an actual surplus of \$42.9 million compared to a budget surplus of \$37.1 million. This result includes Rates and Annual Charges income of \$142.1 million which represents the full year income.

The Q3 YTD result reinforces that Council is committed to achieving long term financial sustainability. This report identifies risks impacting the ability to achieve the targeted result however current projections indicate that Council will be in a satisfactory financial position at year end with regard to estimated operating income and expenditures.

Capital Works

Actual YTD capital expenditure is \$45.0 million compared to the YTD budget of \$55.1 million, and represents 54% of the full year capital budget of \$83.8 million.

A thorough review of capital projects has been undertaken for this quarterly review and has resulted in a proposed reduction of \$2.8m (3.3%), decreasing the full year budget to \$81.0 million. The reduction is due to a combination of savings on completed works and delays in proceeding with a number of projects and it is proposed to defer these projects to 2014-15.

Major Projects

The Strategic Plan identifies 15 Council projects as "Major Projects". These are high priority projects that are designated by the General Manager as being of critical importance to improving service delivery to the community. Details on progress of specific actions related to major projects are included with the relevant Principal Activity.

Special Rate Variation Projects

In June 2013, Council was successful in gaining approval from the Independent Pricing and Regulatory Tribunal (IPART) for a Special Rate Variation, providing an increase to General Rates of 6.9% per year for 4 years, commencing 2013-14. This increase includes the normal rate peg amount of around 3% set annually by IPART. In accordance with the IPART approval, the additional rate income must be used to reduce the \$130 million funding shortfall required to return Council's General Fund assets to a satisfactory condition. The funds will be spent on improving the condition of roads, bridges, footpaths, buildings, natural assets and sports facilities. Council will spend approximately \$10 million each year for the next 13 to 15 years, addressing the backlog, reversing a long-term decline in asset conditions.

Council will determine a list of works to be undertaken on an annual basis from the Special Rate Variation funds. This may change during the year due to factors such as changes in asset deterioration rates, weather conditions and alternate funding sources becoming available. All changes will be reported to Council and the community so there is full transparency to ensure the funds are being spent for the purpose they were raised. The IPART approval also requires Council to report on the results achieved from the use of these funds. The table below provides a summary of the year to date status of each of the approved 2013-14 projects.

Special Rate Variation Projects 2013-14	
Project Name	Progress
Outdoor playground upgrade at Treelands Care & Education Centre	On Track
Library RFID improvements	Completed
Install Exercise Equipment Killarney Vale Foreshore Reserve*	Completed
Install Exercise Equipment at Mannering Park*	Completed
Tower at Soldiers Beach*	Completed
Norah Head Bald Street Boat Ramp Replacement	On Track
Toukley Pool - Upgrade filtration system in pool plant room	On Track
Disabled Toilet Level 4 Civic Centre*	On Track
Air Conditioning unit replacements	Completed
Asset Protection Zone (APZ) Upgrades	On Track
Fire Trail Upgrades	On Track
Kitchenettes Upgrades	Completed
Natural Asset Capital Upgrades and Renewals	On Track
Passenger Lift Upgrade (Lift No 2)**	On Track
Budgewoi Town Centre Masterplan Implementation*	Completed
Wyong Civic and Cultural Precinct Masterplan*	On Track
Lake Haven Town Centre Masterplan Implementation**	On Track
Long Jetty Town Centre Masterplan Implementation	On Track
Toukley Town Centre Masterplan	On Track
Anita Avenue at Agatha - road upgrade	Completed
Bay Road - road upgrade	Deferred
Berkeley Road - road upgrade	Deferred
Bumble Hill Guardrail	Completed
Bunning Creek Road - road upgrade	Completed
Elouera Ave - road upgrade	Deferred
Goorama Ave - road upgrade/renewal	Completed
Panorama Ave/Hobson - road upgrade/renewal	Deferred
Saltwater Creek Killarney Vale timber footbridge replacement programme	Deferred
Shire Wide bridge renewals	On Track
The Entrance Road disabled parking improvements	On Track
The Ridgeway (CH1100 CH1870) - road upgrade and renewal**	On Track
Timber footbridge replacement programme – Peninsula	On Track
Tumbi Rd at The Ridgeway road safety facilities***	On Track
Moala Parade Charmhaven Pavement upgrade*	Completed
Mandalong Road Dooralong*	Completed
Gascoigne Avenue Gorokan Pavement upgrade*	On Track
Cornish Avenue Killarney Vale Pavement upgrade*	On Track
Anne Findlay Place Bateau Bay Pavement upgrade*	Completed
Wahroonga Road Kanwal Pavement upgrade*	Completed
McPherson Road Mardi Pavement upgrade*	Completed
Woolworths Way Warnervale Pavement upgrade*	Completed
Sherry Street Tumbi Umbi Pavement*	Completed
Cuthbert Road Killarney Vale Pavement upgrade*	Completed

Special Rate Variation Projects 2013-14	
Project Name	Progress
Heador Street Toukley Pavement upgrade*	Completed
Malana Avenue Bateau Bay Pavement upgrade*	Completed
Woolana Ave Halekulani Pavement renewal*	On Track
Greenacre Ave Lake Munmorah*	On Track
Thompson Road Toowoomb Bay Upgrade*	On Track
Information Technology	On Track
Finance Technology upgrades	Off Track

*Alternate SRV Project

**Project no longer funded by SRV

***Incorporated into another existing SRV Project

During this Quarter resources were re-allocated to work on the Wyong CBD drainage project (non SRV project) to precede development projects within the Wyong CBD including construction of the Art House, Frank Ballance Park and Aldi development. This has resulted in a number of Road Upgrade projects being deferred until 2014-15. SRV funding is proposed to be allocated to other Road Pavement upgrade projects that are identified in Council's infrastructure backlog program of works and indicated by * above. In some cases the alternate Road projects were initially classified as Renewal projects, but during detailed investigation and design phases were identified as requiring more extensive upgrade work and therefore able to be funded by the SRV.

The end result of the deferrals and reclassifications is that Council's allocation to SRV projects in 2013-14 is \$10.7 million.

Further analysis of Council's 2013-14 Capital Expenditure can be found in section 3.3.

Financial Snapshot

Financial Performance 2013-14	YTD Actual \$'000	YTD Budget \$'000	YTD Variance \$'000	Full Year Budget \$'000	Proposed Changes \$'000	Projected Full Year \$'000
Income (excluding capital)	206,672	210,212	(3,540)	234,161	(3,472)	230,688
Expenses	163,766	173,100	9,334	236,505	(6,969)	229,535
Net Operating Result before capital items	42,906	37,112	5,794	(2,344)	3,497	1,153

Note: Budget above represents Q2 adopted budget figures

Financial Position as at 31 March 2014	YTD Actual \$'000	Full Year Budget \$'000
Assets	2,764,646	2,506,992
Liabilities	317,568	335,685
Position	2,447,078	2,171,307

Council's equity as at 31 March 2014 is \$2.4 billion.

The improved balance sheet position, in comparison to the budgeted position, predominantly relates to an increase in infrastructure, property, plant and equipment as a result of the rolling revaluation program undertaken in 2012-13. The componentisation of Council's building assets and a review of residual values and effective live for Council's plant and equipment assets at June 2013 provided greater carrying values than original budget estimates.

2.

Progress on Principal Activities

2.1 Council's Delivery Plan

Council's 2013-17 Strategic Plan details the main activities Council will deliver from 2013-14 through to 2016-17. The Office of Local Government's Integrated Planning and Reporting Framework requires Council to prepare a Four Year Strategic Plan and report to Council on progress against it at least every six months.

Council's 2013-17 Strategic Plan contains the:

Operational Plan

The Operational Plan is a subset of the Four Year Delivery Plan and describes the activities to be undertaken by Council in the 2013-14 financial year. The Operational Plan includes the capital and operational expenditure budgets for the coming financial year.

Four Year Delivery Plan

The Four Year Delivery Plan outlines the Principal Activities plus the capital investment to be undertaken by Council in the medium term. It also includes actions for delivering the objectives and strategies within the Community Strategic Plan.

Council's Principal Activities

Council has the following 12 Principal Activities that are the core services it provides to the community:

- | | | | |
|------------------------------------|---------------------------|---------------------|-----------------------|
| 1. Community & Education | 4. Council Enterprises | 7. Waste Management | 10. Sewerage Services |
| 2. Community Recreation | 5. Regulatory | 8. Roads | 11. Water Supply |
| 3. Economic & Property Development | 6. Environment & Land Use | 9. Drainage | 12. Administration |

Assessing Council's Progress

In assessing Council's progress in implementing the 2013-17 Four Year Delivery Plan and the 2013-14 Operational Plan, a range of qualitative and quantitative performance measures are used.

This report focuses on the performance of:

- Operational activities
- Major Projects
- Special Rate Variation Projects
- Financial sustainability

Within each Principal Activity includes highlights of achievements and actions, and progress details of the operational activities, Major Projects and Special Rate Variation Projects. A budget summary is also included, with detailed budgetary performance contained within Section 3 and 4.

The table below is a summary of the overall progress on the 270 performance targets and actions as per the 2013-14 Operational Plan.

Status	On Track	Off Track	Deferred	Completed	Total
Special Rate Variation	15	1	5	10	31
Major Project	11	1	1	3	16
Operational Activity	142	21	26	34	223
Total	168	23	32	47	270
%	62%	9%	12%	17%	100%

2.2 Principal Activity 1 – Community and Education

Community and Education provides information, places and spaces for people to participate learn and contribute to their local neighbourhood to improve their quality of life.

Budget Overview

Financial Performance 2013-14 Community and Education	YTD Actual \$'000	YTD Budget \$'000	YTD Variance \$'000	Budget Full Year \$'000
Income (excluding capital)	4,218	4,672	(454)	6,445
Expenses	11,148	12,662	1,514	17,755
Net Operating Result	(6,930)	(7,990)	1,059	(11,310)
Capital Expenses	2,984	3,323	(340)	5,352

Performance Summary

The following summarises progress on activities identified for delivery under this Principal Activity.

Status	On Track	Off Track	Deferred	Completed	Total
Special Rate Variation	1	0	0	1	2
Major Project	2	0	0	0	2
Operational Activity	23	5	0	3	31
Total	26	5	0	4	35
%	74%	14%	0%	12%	100%

Highlights

Join up January

Our libraries encouraged people to sign up to win an iPad mini. An impressive 769 people joined the libraries during the campaign and Michelle Amos from Buff Point was the lucky winner of the iPad. Council has 37,000 library members across the Shire's five libraries, which regularly host workshops such as the HSC workshops held in March, and community activities like learning to use computer programs and children's art and craft.

Book a Day Program

More than 500 Wyong Shire kids signed up to the Born to Read – Book a Day program launched in June 2013. The program is designed for children who haven't started school yet and encourages parents to read as many books as possible to their children before they do start school. The benefits of reading to children are well documented and conclude that reading to children six or seven days a week puts them ahead of children who are not read to when they start school.

Australia Day

Council and local business sponsored colourful Australia day events at The Entrance, Canton Beach and Wyong. Activities included ice-cream eating competitions, lamington making, trivia, kids' disco, wood turning and fireworks. The Special Olympics Dancers were this year's Australia Day ambassadors. The group of intellectually disabled teenagers and young adults danced at all three community events at Canton Beach, The Entrance and Wyong which were held on three consecutive days.

Central Coast Drum Fest

Council hosted the DrumFEST 2014 at Gravity Community Park in Lake Haven. The event featured world class local and international drumming, cultural and performance groups, and has the potential to attract tourism. DrumFEST is the Central Coast's premier drumming event featuring world class local and international drumming, cultural and performance groups. It gets bigger and better each year and has other activities such as hula hooping, belly dancing, body percussion, and gypsy markets.

Youth Skills and Employment Centre

Construction of the new \$2.7 million regional youth training and employment centre at Tuggerah Business Park is well underway. Trainees and apprentices visit the centre twice a week to gain on the job experience. The project is a partnership between Council, the Federal Government and Central Coast Group Training.

New Lifeguard uniforms

Our lifeguards are now sporting new uniforms, creating a consistent visual message across the Central Coast in line with the colours worn by volunteer lifesavers. The aim is to associate the lifeguard colours red, white and yellow with safe swimming. The lifeguards were happy with the new uniforms and said the public can easily see who to go to for help.

Photographic competition

Our annual competition for talented amateur and semi-professional photographers is up and running again as 'Exposure'. To help budding photographers hone their photographic skills we hosted two free workshops run by acclaimed Central Coast photographers Glenn McKimmin and Danny Irvine in two of our community centres at The Entrance and Blue Haven. There are four categories in the competition and photos need to represent the Wyong Shire in some way to be eligible to enter. Winning shots will be exhibited and the best images will also feature in a commemorative calendar.

Construction tender for The Art House

The tenders were called for construction of the \$12.7 million performing arts centre in Wyong CBD. Drainage works also commenced as part of the requirements before The Art House can be built. The Art House will be the Central Coast's premier performance venue, able to host up to 500 people in its auditorium. Its construction ties into recognition of arts and culture in the Shire, and the Central Coast's talented people who require platforms for expression.

Community Ward Forums

A decision was taken to introduce Community Ward Forums as a way to increase two way engagements with the public. The new ward forums start in May and will occur quarterly. The community is given the opportunity to submit recommendations for topics to be discussed at the forums.



The Youth Skills and Employment Centre at Tuggerah Business Park

Performance Targets

	Year of Action	Q3 Status	Q3 Comments
Community Partnerships and Planning			
Special Rate Variation Projects			
Outdoor playground upgrade at Treelands Care & Education Centre: Complete outdoor playground area upgrade started in 11/12 to meet National Quality Framework requirements and commitments made to the Department of Education and Communities. This includes construction of wooden deck, digging patch and installation of shade sail. 2014/15 program includes complete resurfacing of infants playground and construction of new sandpit and shade area	2013/14	On Track	Work has commenced with installation of deck and digging patch at Treelands. Awaiting final installation of spheres and artwork
Major Projects			
Wyong Shire "Art House" (subject to funding) - The construction of a performing arts centre that will provide a state of the art facility for the Central Coast	2012-16	On Track	Business plan completed and reported to Council. Council commitment of \$1m per year for next 10 years. Work commenced on drainage works
Operational Activity			
Implement key actions from the Learning Communities Strategy*	2012-16	On Track	Learning Network/website reviewed to link with Community Directory upgrade, Grants submitted for 'nutrition and cooking for families' program and 'recipes and literacy for children'
Implementation of key actions from the Community Facility Strategy*	2012-16	On Track	Access report and upgrades completed at 4 community facilities. Improved asset management systems implemented. Improved marketing undertaken for community facilities including website upgrades
Continue to focus on events that address key corporate opportunities and resourcing / development requirements for the community	2013/14	On Track	Hosted Australia Day, Harmony Day celebrations, Seniors week, Drumfest and the Big & Bold event
Introduce electronic portfolios for children*	2012-16	Completed	
Undertake service changes in Care and Education that model sustainable business practice to the community and children/families*	2012-16	On Track	Expressions of Interest process completed and reported to Council. Recommendation to invite 5 parties to progress to select tender for operation/sale of business
Complete Development of Positive Ageing Strategy to respond to the opportunities and challenges of an ageing population	2013/14	On Track	Draft strategy being finalised and a draft Healthy Ageing Resource
Preparation of concept design for Warnervale Community Hub*	2013/14	Off Track	No further progress
Complete the realignment of the critical building asset registers within Council's corporate asset management systems*	2012-16	Completed	Asset valuations completed by each component for Community and Recreation Services. Data was uploaded in to Council's Asset Management System
Customer and Community Relations			
Special Rate Variation Projects			
Library RFID improvements: Install six floor mounts for RFID gates to improve access	2013/14	Completed	
Major Projects			
Lake Munmorah Civic Centre (Government Hub) - Identification and planning for a Lake Munmorah Civic Centre to improve accessibility to all government services for all community members in the north area of the Shire	2013/14	On Track	Location visits to various Sydney Smart Work Hub operations with Central Coast Smart Work Hub Network to consider model for hub operations. WSC now member Central Coast Smart Work Hub Network
Operational Activity			
Review Reputation Management Framework and Strategy	2015-16	On Track	Reviewed the Media Management Process and developed Dealing with the Media Policy.
Library Services - 5% increase in overall customer	2013/14	On Track	Exceeding target at 23.8% YTD

	Year of Action	Q3 Status	Q3 Comments
interaction (including: programs, website, Wi-Fi, PC usage, digital loans and door count) customer enquiries			
An increase in Library membership of 1.5% per annum	2013/14	Off Track	-2.3% in total membership. 11.5% increase in new borrowers
Cultural Enrichment (2013/14) Explore opportunities to bring music and art based experiences into the Library through external collaboration and partnership*	2012-16	On Track	Continued knitter session with 27 knitters sessions with over 100 attendances
Implement 2014/2015 priority actions from Library Strategic Plan	2014/15	On Track	Not yet commenced
Implement 2015/2017 priority actions from Library Strategic plan	2015/16	On Track	Work not commenced, due 2015/16
Implement Learning Communities Strategy priority actions*	2013/14	On Track	614 children enrolled in Born to Read program. Over 95 seniors attended learning about meditation, local history, natural remedies, digital device labs and relaxation programs
Implement exterior area upgrade for Toukley Library nested assets in consultation with other asset planners to address Work Health Safety risks. (Subject to CAPEX funding)	2013/14	On Track	Development Application lodged and awaiting approval
Implement high priority 2013/2014 actions from Library Strategic Plan	2013/14	Off Track	Library Strategic Plan not yet finalised
Maintain ongoing learning partnerships between external organisations and Wyong Shire Council and increase collaboration between members of the Wyong Shire Learning Network resulting in the development of 1 new learning partnerships between local services/organisations	2014/15	On Track	Works not commenced
Maintain ongoing learning partnerships between external organisations and Wyong Shire Council and increase collaboration between members of the Wyong Shire Learning Network resulting in the development of 2 new learning partnerships between local services/organisations	2013/14	Off Track	Work not commenced due to Learning Partnership role change
Develop a Corporate and Place Brand Strategy by June, 2014*	2013/14	On Track	Discovery and research phase of the project completed and findings presented to Internal and External Brand Counsels and Project Steering Group. Draft Brand Strategy and Architecture based on research developed
Develop a marketing strategy by June 2013*	2013/14	Completed	
Implement the marketing of high priority actions from the Economic Development Strategy	2013/14	On Track	Draft Economic Development Strategy finalised, promoted at Economic Breakfast and issued for industry consultation. Development of marketing actions for Airport and Iconic sites underway, Commenced development of distinct brand identity to market the Wyong Shire
Review Engagement Policy and Strategy	2016/17	On Track	Continuous improvement briefing paper finalised and incorporated into 2014/2015 Engagement Strategy
75% customer satisfaction with service provided by Customer Contact	2013/14	On Track	Survey to be conducted in Quarter 4
78% of calls are responded to at the first point of contact by Council Customer Contact	2013/14	On Track	Currently tracking at 80.23%
<5% of calls received are not abandoned by Council Customer Contact	2013/14	Off Track	Currently tracking at 5.44%, improvement since last quarter. Expect to end year closer to target
Develop an Online Business Strategy for customers and partners to do online business with Council by June 2014 (partner with IM)*	2012-16	On Track	Key services identified for online improvement
Develop and conduct a Customer Survey Program by June 2017*	2012-16	On Track	Commenced development of process for Voice of Customer survey
Implement specific actions to support the organisation's cultural change in customer focus	2013/14	On Track	Voice of Customer Workshop held in March. Draft program under development

	Year of Action	Q3 Status	Q3 Comments
			including complaints management
Increase the range of self-help services available online to customers by June 2015*	2012-16	On Track	Mobile application Report an Issue launched
Review Customer Focus Strategy	2016/17	On Track	Actions identified from Customer Journey Mapping and Voice of Customer program to be included as 2014/15 actions

*This target is a carry-over from the Wyong Shire Council 2012-16 Strategic Plan

2.3 Principal Activity 2 – Community Recreation

Community Recreation plan, promote and operate sporting and recreation facilities and services to encourage an active and healthy lifestyle, and maintain natural areas and open spaces such as beaches, lake foreshores and parks for community use and environmental protection.

Budget Overview

Financial Performance 2013-14 Community and Recreation	YTD Actual \$'000	YTD Budget \$'000	YTD Variance \$'000	Budget Full Year \$'000
Income (excluding capital)	984	1,135	(151)	1,375
Expenses	13,506	14,205	699	19,221
Net Operating Result	(12,521)	(13,069)	548	(17,846)
Capital Expenses	912	1,209	(297)	1,621

Performance Summary

The following summarises progress on activities identified for delivery under this principal activity.

Status	On Track	Off Track	Deferred	Completed	Total
Special Rate Variation	1	0	0	1	2
Major Project	2	0	0	0	2
Operational Activity	15	1	1	3	20
Total	18	1	1	4	24
%	75%	4%	4%	17%	100%

Highlights

Alison Homestead

A Development Application was lodged at the end of December to reconstruct historic Alison Homestead. The historically significant site was badly damaged after an arson attack. Plans are to rebuild the least damaged section and have the homestead function as a heritage museum. The internal area will be rebuilt to be more flexible and functional to accommodate a broader range of uses.

Sportsgrounds

Staff prepared sportsgrounds for the winter season. They require annual maintenance to keep them in good condition for play. This involves, among other things, soil testing, weed spraying, top dressing, and line marking and setting up various goal posts according to the different sports codes. Sportsground closures are now updated daily and automatically appear on the website and bounce back service with the help of tablet technology. The wet weather line was shut down in preference to website information and the sms bounce back service.

New bridge adds to shared pathway network

Council improved a section of shared pathway at Berkeley Vale by replacing the older timber bridge with a more robust structure that meets current safety standards. Council filmed the enormous crane lifting sections of the bridge into place. The new bridge is due to open in July. This section of the shared pathway provides a link between Berkeley Vale and Killarney Vale foreshores.



Ten storey crane places sections of the bridge at Berkeley Vale



A boat launches off the uneven ramp's surface

Norah Head boat ramp

Extensive works will start in April on the Norah Head boat ramp. One of the lanes on the two lane ramp was closed due to the deteriorating conditions of the concrete gradient and Council hopes to have the works completed by Christmas. Other works include constructing a sea wall, moving the sewer mains, building a car park and adding to the surrounding road. The Norah Head boat ramp is the Shire's only ocean access ramp and is a popular local spot as well as a major tourist attraction.

Playground awards

Council won two categories of the Parks and Leisure Australia Regional Awards 2014 (NSW and ACT) for our playgrounds at Canton Beach and Bamayi Reserve. The playgrounds were recognised for industry excellence in design and community engagement. Bamayi had to cater for a wide range variety of users and subsequently combined play and picnic facilities that a broad range of ages could enjoy. Canton Beach achieved 80 percent disability accessibility in its play equipment, opening opportunities for social interaction.



Kathy Simmons, Doug Eaton and Brett Sherar are presented with the Parks and Leisure awards

Performance Targets

	Year of Action	Q3 Status	Q3 Comments
Open Space and Recreation			
Special Rate Variation Projects			
Install Exercise Equipment Killarney Vale Foreshore Reserve**	2013/14	Completed	
Install Exercise Equipment at Mannering Park**	2013/14	Completed	
Tower at Soldiers Beach**	2013/14	Completed	
Norah Head Bald Street Boat Ramp Replacement: Replacement of Boat Ramp	2013/14	On Track	Contractor appointed and works to commence on site on the 28th of April 2014
Toukley Pool - Upgrade filtration system in pool plant room: Required for efficient operations and to reduce ongoing maintenance costs. Without improvements the water is in danger of being poorly filtered	2013/14	Completed	Filters fully refurbished and operational
Major Projects			
Support and Promotion of Dune Care / Landcare - Support and promotion of the extensive volunteer network to enhance the environmental outcomes	2013/14	On Track	Active Groups 40, Volunteers 462 and 196 people trained YTD
Support of Pioneer Dairy and Regional Sport Facility development - Support and promotion of this unique Community facility to increase utilisation	2013/14	On Track	Land acquisition has commenced, a project manager appointed and Development Application requirements determined
Operational Activity			
Aquatic Infrastructure strategy is adopted by June 2013*	2013/14	Off Track	Currently being finalised prior to being presented to Council
Construction of Saltwater Creek Playground Car park	2016/17	On Track	2016/17 project
Construction of Saltwater Creek trailer parking	2016/17	On Track	2016/17 project
Implement priority actions from the Aquatic Infrastructure Strategy*	2012-16	On Track	Toukley bridge abutments and Norah Head boat ramp being renewed or repaired
>1000 Trees planted in the public domain	2013/14	On Track	Greater than 700 trees planted to date
>400 active Land Care volunteers	2013/14	On Track	Currently 462
Implement key actions out of the Master Plan for Tunkawallin and Boat Harbour*	2012-16	On Track	No further works this quarter
Implement priority actions from the On-road Bicycle and Shared Pathway Strategy*	2012-16	On Track	Approximately 1km of shared pathway constructed YTD
Construction of the Lakes Beach Lifeguard Tower	2013/14	On Track	Funding available through Quarter 2. Building purchased, on-ground works to commence shortly
Continue to implement the key actions out of the Playground Strategy*	2012-16	Deferred	Works to commence in 2014/15 financial year
Feasibility study of the area between the freeway and Mardi landfill site for future sports fields. This project will commence in 2013/14*	2012-16	On Track	Works to commence before the end of the financial year
Implement the priority actions of the Tennis Review*	2012-16	On Track	7 of 12 of tennis facilities are now managed under a lease agreement
Construction Entrance District Sporting and Community (EDSACC) Centre North Sub-soil drainage	2013/14	Completed	
No fatalities in flagged areas on Council beaches while professional lifeguard services are on duty	2013-17	On Track	Zero fatalities to date
90% of services performed to schedule (parks and reserve maintenance)	2013/14	On Track	99% YTD
90% of services performed to schedule (sport field maintenance)	2013/14	On Track	Greater than 97% of services completed YTD
Monthly safety inspections completed on time	2013-17	On Track	Visual inspections completed
Seasonal changeovers and maintenance completed on time	2013/14	Completed	All seasonal changeovers completed
90% of services performed to schedule (roadside and other vegetation control)	2013/14	On Track	Greater than 98% completed YTD
Undertake a large scale nursery improvement program subject to Federal biodiversity grant funding*	2013/14	Completed	Nursery closed and plants are sourced from commercial nurseries due to cost analysis determining this is the most cost effective process. No further works to be undertaken

*This target is a carry-over from the Wyong Shire Council 2012-16 Strategic Plan

**Alternate SRV project – not included as part of the 270 performance targets and actions

2.4 Principal Activity 3 – Economic and Property Development

Economic and Property Development is responsible for strengthening the economic base of the Shire by promoting economic development as well as the creation of employment opportunities. It identifies and develops sustainable income strategies for Council. In addition, it provides property related services for the organisation as well as supporting the development and rejuvenation of the town centres.

Budget Overview

Financial Performance 2013-14 Economic and Property Development	YTD Actual \$'000	YTD Budget \$'000	YTD Variance \$'000	Budget Full Year \$'000
Income (excluding capital)	1,609	1,414	195	2,609
Expenses	7,979	10,022	2,043	13,137
Net Operating Result	(6,370)	(8,607)	2,238	(10,528)
Capital Expenses	1,782	2,872	(1,090)	4,289

Performance Summary

The following summarises progress on activities identified for delivery under this principal activity.

Status	On Track	Off Track	Deferred	Completed	Total
Special Rate Variation	8	0	0	3	11
Major Project	3	1	0	1	5
Operational Activity	22	7	13	8	50
Total	33	8	13	12	66
%	50%	12%	20%	18%	100%

Highlights

Calls for expressions of interest in Iconic Sites

Council has asked the private sector to lodge expressions of interest to develop Council owned sites in three town centres: Toukley, The Entrance and Wyong. This closed on 13 March with 31 requests for more information, resulting in 11 proposals. There is a five year window for developers to take advantage of new height opportunities around the Iconic Sites allowed under the new Wyong Local Environmental Plan 2013. A total of 28 sites were earmarked as potentially iconic development and investment opportunities. Council will market these key opportunities in order to encourage action on economic and employment fronts.

Master Plans

Council's Master Plans focus on improvement and upgrades to revitalise town centres. Works are underway on the following Master Plans: Wyong CBD, Budgewoi, Toukley, Lake Haven and Long Jetty. In Toukley work started on a north-south pedestrian link to connect the Senior Citizens Centre and Toukley Village to provide access to shops and restaurants. Repairs and upgrades began on Long Jetty's famous namesake. The next stage in Budgewoi is the procurement of sports equipment and street furniture as well as commencement of the boardwalk in the Eastern Village. Public exhibitions closed on the Bateau Bay and Lake Haven Master Plans and a new cinema was approved for Lake Haven as well as a new Centrelink building. Drainage works started in Wyong CBD.



Levelling the site for the Metro Cinema

DA applications

Council continues to report increases in development applications with \$81 million in development applications approved in the January–March quarter.

Lake Haven Cinemas

The new cinema complex is fast becoming a reality at Lake Haven with construction underway. The cinemas are located between Gravity Youth Centre and the Lake Haven Recreation Centre and will be the catalyst for a renewal of the area, catering for outdoor dining and a new civic space. The eight cinema complex is due to open at the end of this year. It will be operated by Metro Cinemas and provide solid long term returns to Council.

New hope for Bluetongue Brewery

Council is proposing to salvage Bluetongue Brewery by purchasing the site and reopening it as a water bottling plant. Mayor Doug Eaton and Manager Michael Whittaker met with Carlton United Brewery to discuss the proposal. No plans have been formalised as yet. The brewery is scheduled to close by the end of the year with 64 jobs lost.

Long Jetty Facelift

Works are underway in Long Jetty on upgrading the oldest and longest jetty which is turning 100 next year. All three jetties are receiving repairs with other enhancements planned such as lighting, seating and floating pontoons. Two jetties were scheduled for completion this financial year – Parry's and Long Jetty - and the third jetty – Watkins Jetty - in the 2014-15 financial year.



Ken Duncan, Long Jetty, in Coastal Paradise Revealed

Performance Targets

	Year of Action	Q3 Status	Q3 Comments
Property Management			
Special Rate Variation Projects			
Disabled Toilet Level 4 Civic Centre**	2013/14	On Track	To be completed before 30/6/14
A/C units replacements: Replace various A/C units based on recommendations from an audit carried out last year	2013/14	Completed	
Asset Protection Zones Upgrades: Upgrade and improvement in 30 APZ	2013-17	On Track	On track to complete 15 upgrades
Fire Trail Upgrades: Upgrade and Improvement in 2 fire trails	2013/14	On Track	Stage 1 Mardi Fire trail construction to be awarded in April for completion/substantial completion by June
Kitchenettes Upgrades: Upgrading of 4 kitchenettes (per annum) to meet legislative requirements per year	2013/14	Completed	
Natural Asset Capital Upgrades and Renewals: Natural Asset Capital Upgrades and Renewals including signage, trail restoration, fencing, barriers, erosion control	2013/14	On Track	
Passenger Lift Upgrade (Lift No 2): Upgrade of Civic Centre Lift No 2 to meet legislative guidelines	2013/14	On Track	Second lift to be handed over 14/4/14
Major Projects			
Enhanced Graffiti Removal - Enhanced amenity and reduced ongoing maintenance costs	2013/14	Completed	Graffiti service responses up to date and increased security has led to reduced maintenance costs
Operational Activity			
Global Reporting Initiative Performance Indicator EN3 - Direct energy consumption by primary energy source to a target	2013-17	On Track	Annual figure to be reported in Quarter 4
Global Reporting Initiative Performance Indicator Environmental 22 - Amount of waste created by Council's operations, including type and disposal method	2013-17	On Track	Annual figure to be reported in Quarter 4
Global Reporting Initiative Performance Indicator Environmental 22 - Total weight of waste collected by type and disposal method	2013-17	On Track	Annual figure to be reported in Quarter 4
10% Increase in rental and/or land sale revenue to Council	2013-17	On Track	Rent increases of \$125K since 1/7/13
Complete 2 Sustainability Advantage modules*	2013/14	Completed	
Complete the milestones in Sustainability Advantage Program*	2013/14	Off Track	Reduction in staff and resources and a shift in organisational priorities are limiting. Council involvement in the Sustainability Advantage Programme.
Develop Sustainability Strategy by 30 June 2013*	2013/14	Off Track	Reduction in staff and resources and a shift in organisational priorities has delayed the development of the Sustainability Strategy
New lease revenue of \$500K achieved by 30 June 2014*	2013/14	Off Track	No new major leases since Quarter 2
Review standard lease template to ensure compliance with contemporary commercial practice by December 2012*	2013/14	On Track	New template(s) to be finalised by 30/6/14
Refurbish three toilet blocks each year*	2012-16	Deferred	No funding provided in 2013/14
Implement the priority actions arising from the Community Facilities Strategic Plan*	2012-16	On Track	
Property Development			
Special Rate Variation Projects			
Budgewoi Town Centre Masterplan Implementation: Priority projects identified in the Budgewoi Town Centre Masterplan	2013/14	Completed	Implementation Plan complete and works commenced
Wyong Civic & Cultural Precinct Masterplan	2014/15	On Track	Design and tender documentation complete for Frank Ballance Park

	Year of Action	Q3 Status	Q3 Comments
Lake Haven Town Centre Masterplan Implementation: Priority projects identified in the Lake Haven Town Centre Masterplan which is anticipated to be adopted by Council during the first quarter of 13/14	2013/14	On Track	Priority projects identified and commenced
Long Jetty Town Centre Masterplan Implementation: Priority projects identified in the Long Jetty Town Centre Masterplan which is anticipated to be adopted by Council during the first quarter of 13/14	2013/14	On Track	Priority projects identified and commenced
Toukley Town Centre Masterplan: Toukley Eastern north-south link footpath, landscape and safety upgrade	2013/14	On Track	Construction work to commence in April 2014
Major Projects			
Airport (Bushells Ridge) - Support and promotion of the establishment of a regional airport on the border of Wyong Shire and Lake Macquarie Councils	2013/14	On Track	
Iconic Sites Development - Development of key iconic sites to increase economic and sustainable development	2013/14	On Track	Development Applications submissions to be lodged 2013/14
Property Portfolio Strategy - Identification and planning for future development to create a revenue stream to off-set increase rates	2013/14	On Track	Draft Property Strategy complete (pending adoption) and review of property portfolio underway
Warnervale Town Centre - Development of the Warnervale Town Centre to support local community and future development	2013/14	Off Track	Warnervale Town Centre entry road due to commence by mid-2014
Operational Activity			
Iconic Development Sites Implementation	2013-17	Completed	Planning controls now in Wyong Local Environmental Plan 2013
Commence the implementation of the Pacific Hwy/Alison Rd Wyong Masterplan by December 2013	2013/14	Deferred	Due to delays with Road and Maritime Services plans this project will be deferred
Commence the implementation of the high priority projects identified in the Bateau Bay Masterplan by December 2013	2013/14	Off Track	Masterplan adopted by Council in April, with implementation plan to follow
Commence the implementation of the high priority projects identified in the Killarney Vale Masterplan by June 2014	2013/14	Deferred	Deferred to 2014/15
Commence the implementation of the high priority projects identified in the Lake Haven Masterplan by December 2013	2013/14	On Track	
Commence the implementation of the high priority projects identified in the Long Jetty Masterplan by December 2013	2013/14	On Track	Long Jetty Wi-Fi, Jetties, Main Street bin hutches and kerb ramps nearing completion
Commence the implementation of the high priority projects identified in the Norah Head Masterplan by June 2014	2013/14	Deferred	Deferred to 2014/15
Complete and adopt the Bateau Bay Masterplan by March 2014	2013/14	Off Track	To be adopted by Council in April 2014
Complete and adopt the Budgewoi Masterplan by March 2014	2013/14	Completed	
Complete and adopt the Lake Haven Masterplan by March 2014	2013/14	Off Track	To be adopted by Council in April 2014
Complete and adopt the Long Jetty Village Centre Masterplan by December 2013. The service also includes identifying alternate funding sources to assist in the delivery of these plans	2013/14	Completed	
Complete and adopt the Pacific Highway/Alison Rd Masterplan by March 2014	2013/14	Deferred	Due to delays with Road and Maritime Services plans this project will be deferred
Complete the concept design for the redevelopment of the Memorial Park at The Entrance	2013/14	Completed	
Complete the construction of Stage 1 of Frank Ballance Park*	2012-16	Deferred	This project is deferred due to several issues - major drainage works and funding priority for the Art House project.
Complete the detailed design and documentation of the Civic Plaza in Margaret Street Wyong	2013/14	Deferred	This is a capital project does not have any funding allocation
Continue the tile replacement program at The	2012-16	On Track	Contractor appointed for Stage 2 works

	Year of Action	Q3 Status	Q3 Comments
Entrance*			
Continue to work with the Department of Planning and Infrastructure on the preparation of the Tuggerah Town Centre Masterplan - External Project.	2013/14	On Track	Preliminary briefing provided by Department of Planning and Infrastructure.
Develop Urban Design Guidelines for the remaining development areas in the Shire	2013/14	Deferred	To be completed in 2014/15 for Town Centres
Finalise Ourimbah Masterplan*	2012-16	Deferred	Rescheduled for 2014/15
First draft completed of the Ourimbah Masterplan study*	2013/14	Deferred	
Review Active River Foreshore & Baker Park Masterplan by June 2015	2014/15	On Track	
Review Bateau Bay Town Centre Improvement Masterplan by June 2015	2014/15	On Track	
Review The Entrance Town Centre Masterplan by June 2015	2014/15	On Track	
Review Toukley Town Centre Improvement Masterplan by June 2015	2014/15	On Track	
Commence implementation of actions identified in the adopted Wyong Shire Settlement Strategy*	2012-16	Completed	
Develop a Tourism Infrastructure Plan by June 2013*	2013/14	Completed	
Finalise Amendment 1 to the Wyong Local Environmental Plan and Wyong Development Control Plan 2012*	2012-16	On Track	Stage 1 Local Environment Plan Amendment is due to go to Council in May/June 2014
Implement Phase 2 of the Ourimbah Master plan*	2012-16	Deferred	Will be implemented once stage 1 is complete
Review Town Centre development options for the Ourimbah Masterplan by August 2012*	2013/14	Deferred	Deferred to 2014/15
Review of the Central Coast Regional Strategy*	2012-16	On Track	
Review and finalisation of the existing draft Shire Wide s94 Contributions Plan*	2013/14	Completed	
Develop a Property Development and Investment Strategy by 30 June 2013*	2013/14	On Track	Draft Property Strategy complete (pending adoption) and review of property portfolio underway
Management of two external organisations on their performance against funding agreements	2013-17	On Track	
Build a long term (greater than 5 year) property development portfolio that will enable Council to roll out development projects in excess of \$5m per annum	2012-16	On Track	
Develop a detailed project plans for 5 iconic sites*	2013/14	Off Track	Development Application plans are being prepared for 3 Council owned Iconic Sites
Establish a register of sites appropriate for development of aged housing*	2013/14	On Track	Being established as part of the property portfolio review
Make submissions & recommendations on development opportunities to leverage Councils financial position for Denning / Short Street car park by December 2012*	2013/14	On Track	
Make submissions & recommendations on development opportunities to leverage Councils financial position for Warnervale Airport by December 2012*	2013/14	Deferred	Site to be reviewed in 2014/15
New Business start-ups and relocations	2013-17	On Track	Metro Cinema and Stirloch Centrelink Development in Lakehaven

*This target is a carry-over from the Wyong Shire Council 2012-16 Strategic Plan

**Alternate SRV project – not included as part of the 270 performance targets and actions

2.5 Principal Activity 4 – Council Enterprises

Council Enterprises provides care and education services and holiday parks. With large numbers of children in the Shire, long day care centres provide quality education and care for 0-6 year olds. Council's holiday park facilities are also a significant contributor to the local tourism industry and provide a funding stream for works on Crown Reserves in close proximity to the holiday parks.

Budget Overview

Financial Performance 2013-14 Council Enterprises	YTD Actual \$'000	YTD Budget \$'000	YTD Variance \$'000	Budget Full Year \$'000
Income (excluding capital)	19,350	19,554	(203)	25,794
Expenses	17,825	19,066	1,241	25,638
Net Operating Result	1,525	488	1,038	157
Capital Expenses	4,611	4,516	94	5,658

Performance Summary

The following summarises progress on activities identified for delivery under this principal activity.

Status	On Track	Off Track	Deferred	Completed	Total
Special Rate Variation	0	0	0	0	0
Major Project	0	0	0	0	0
Operational Activity	5	0	3	1	9
Total	5	0	3	1	9
%	56%	0%	33%	11%	100%

Highlights

Off peak holiday discounts

Central Coast Holiday Parks are offering Shire residents and ratepayers a ten percent discount on off peak rates from April until August. They operate four holiday parks at Budgewoi, Toowoona Bay, Norah Head and Canton Beach. Central Coast Holiday Parks are marketing this deal to encourage locals to experience the beauty of their own backyards from another angle.

Top Ten

Toowoona Bay Holiday Park was voted as one of the Top Ten Best Holiday Parks for 2013 by 'Holidays with Kids' readers. This accolade provided great exposure for Toowoona Bay Holiday Park as well as all other parks advertised under the Central Coast Holiday Parks' brand.

Cemeteries

Closer ties have been established with Wyong Family History Group. Council is attempting to record headstones in Noraville Cemetery to establish a record of all inscriptions and assist with identifying any possible deterioration in monuments. Council is looking at organising day trips to the cemeteries for Wyong Family History Group members later in the year with the cemetery officer to discuss history of the sites and also cemetery services that Council provides to the community.

Performance Targets

	Year of Action	Q3 Status	Q3 Comments
Commercial Enterprises			
Operational Activity			
Plant and Fleet Service unit to deliver a 100% break even cost Structure	2013-17	Completed	Full cost recovery achieved
Holiday Parks- Financial surplus of \$1.5M achieved by 2015/16*	2012-16	On Track	This relates to a financial surplus in 2015-16. The work we are undertaking this year will set the foundations to achieve this surplus later
Holiday Parks- Implement the Marketing Strategy*	2012-16	Deferred	Strategy has been completed, but implementation deferred until Masterplan approved
Holiday Parks- Undertake the key work for 2012/13 as identified in the new Business Strategy*	2013/14	Deferred	Strategy has been completed, but implementation deferred until Masterplan approved
Holiday Parks-Undertake the key work for the current year as identified in the rolling works program*	2012-16	On Track	Key works as prioritised are underway
Implement Cemeteries Plan of Management*	2012-16	On Track	Currently validating status of Cemeteries Plan of Management to ensure currency and support
Alignment and potentially Shared Service arrangement with Gosford City Council for all Plant & Fleet operations including this Service (Mgt) as well as all of the products under the service - Plant Mobile Equipment and Vehicles*	2012-16	Deferred	
Identify and implement options to generate profitable income from external sources (servicing of other fleet-provider's plant & equipment)*	2012-16	On Track	Work continuing
Develop a 10 year plan for maintaining Charmhaven Depot*	2013/14	On Track	Utilisation of the depot will be reviewed as part of the property portfolio review

*This target is a carry-over from the Wyong Shire Council 2012-16 Strategic Plan

2.6 Principal Activity 5 – Regulatory

Regulatory ensures compliance with statutory requirements across a wide range of responsibilities. In most cases Council is the primary provider of these regulatory services which are provided through the enforcement of regulations and statutes.

Budget Overview

Financial Performance 2013-14 Regulatory	YTD Actual \$'000	YTD Budget \$'000	YTD Variance \$'000	Budget Full Year \$'000
Income (excluding capital)	3,672	3,632	41	4,791
Expenses	7,776	7,889	114	10,890
Net Operating Result	(4,103)	(4,257)	154	(6,099)
Capital Expenses	16	23	(7)	23

Performance Summary

The following summarises progress on activities identified for delivery under this principal activity.

Status	On Track	Off Track	Deferred	Completed	Total
Special Rate Variation	0	0	0	0	0
Major Project	2	0	0	1	3
Operational Activity	10	3	1	8	22
Total	12	3	1	9	25
%	48%	12%	4%	36%	100%

Highlights

Biodiversity certification

Warnervale Town Centre received biodiversity certification from the State Office of Environment and Heritage. Now on certified lands, threatened species assessments are no longer required through the Development Application process or when undertaking local and regional infrastructure works.



Native kingfisher

Service Unit Review

The Service Unit Review of the Building, Certification, Compliance and Health Unit was completed and implementation of recommendations commenced. This review has been undertaken to ensure that the service delivery of the unit aligns with the expectations of the community and the direction of Council, and incorporates feedback received from the community during the Special Rate Variation consultation process.

Local Government Road Safety program

Council is taking part in the LGRSP which involves working with the Police, RMS and many sections of Council to achieve results such as lowering rates of road accidents and casualties. Council is promoting a Late Night Transport Guide as a Plan B to get home safely. In January Council also promoted the NSW Police CARES program; an interactive holiday activity that aims to develop children's road sense, including general road safety information on helmets, bike maintenance and safety aspects of riding bikes.

Speed Control Campaign

Council partnered with the Central Coast Highway Patrol to undertake another speed control campaign on Tuggerawong, Rocky Point and Wyongah roads. The annual campaign targets roads that are notorious for speeding and accidents.



Kate Keogh discusses speeding with officers ready to enforce the law

Performance Targets

	Year of Action	Q3 Status	Q3 Comments
Building Certification, Compliance and Health			
Major Projects			
Best Practice Application Assessment - Efficient assessment of Building Certification applications to the benefit of Council and the community through industry best standards for turning around applications	2013/14	On Track	Median processing times for Development Application's is currently 16 days
Operational Activity			
Development applications deliver >\$1 billion in total project value (This is a combined KPI between Building Certification, Compliance & Health and Development and Rezoning Service Units)	2013/14	Off Track	\$294m to date
Implement portable in-vehicle computers connected to Council's On-line to allow access to data in field and reduce time spent on administration*	2013/14	On Track	Integration with Pathway has been delayed but will be completed by May. Devices purchased for Rangers and roll-out to occur in coming weeks
Not less than 75% of all complaints are substantially responded to within 0-5 days. (Substantially responded to includes acknowledging the complainant by phone, e-mail, letter or on-site visit but does not mean the complaint will be completed within that time)*	2013/14	On Track	Acknowledgement letters being sent for all complaints received within 5 days. Reporting on the Service Standard Charter will be finalised during Quarter 4
Process improvements, utilising mobile technology to achieve <5 days median processing times for Complying Development Certificates.	2013/14	Off Track	Legislative changes with regard to notification requirements for Complying Development Certificates mean that this target cannot be achieved regardless of the use of mobile technology, Process improvements still occurring but this target should be revised
Expand online building inspection booking to all of Council customers.	2013/14	Completed	On-line inspection bookings available to all council customers
Complete 2012/13 stage of the Environmental Management Strategy (EMS) by 30 June 2013*	2013/14	On Track	Ongoing. This project is being co-ordinated from outside of the Unit however Building Certification, Compliance and Health staff are providing significant input
Investigate using internal equipment to clear private overgrown blocks	2013/14	On Track	Process review is ongoing and will be resolved as part of Building Certification, Compliance and Health staff restructure
Enhancement of the Electronic Housing Code in conjunction with Local Government NSW and the Department of Planning and Infrastructure	2014/15	On Track	Integration of Electronic Housing Code with Council's new Local Environment Plan is ongoing. Further promotion of the service to occur through the marketing plan for the Certification Service
Development and Rezoning			
Major Projects			
Best Practice Application Assessment - Efficient assessment of Development applications to the benefit of Council and the community through industry best standards for turning around applications	2013/14	On Track	Customer surveys being developed to seek feedback on service and expectations. In addition, service agreement timeframes established with internal referral units. Ongoing training of assessment staff on practical solutions to development issues
Shire-wide Comprehensive LEP and DCP Adopted - Adoption of a new Local Environment Plan that responds to current challenges and opportunities, as well as establishing direction for the Shire for the next 20 years	2013/14	Completed	Local Environment Plan Gazetted on 23 December 2013
Operational Activity			
Development applications deliver >\$1 billion in total project value (This is a combined KPI between Building certification, Compliance & Health and Development and Rezoning Service Units)	2013-17	Off Track	\$294 Million. Although a number of large developments are expected in 2014, it is unlikely that \$700 million of development will be lodged in the 4th quarter
Processing time of employment generating	2013/14	On Track	32 days

	Year of Action	Q3 Status	Q3 Comments
Development Applications to be less than 40 working days (Employment generating is defined as "development applications that will result in at least ten permanent full-time equivalent positions" net median)			
< 25 net median working days processing times for Part 5 matters.	2013/14	Completed	No longer applicable as each directorate now responsible for their own Part V Assessment
< 25 net median working days processing times for development applications (Class 1(a)(ii) and 2-9).	2013/14	On Track	Currently 21.5 days
< 30 working days in accordance with statutory notification period for State Significant Development.	2013/14	On Track	No applications received
Better co-ordination of planning related legal services, including mediated outcomes on legal disputes.	2013/14	Completed	
Development stimulus in conjunction with Economic Property Development to promote and encourage development throughout the shire.	2013/14	Completed	Developer contribution Stimulus package in place
Implement mobile technological tools to streamline current practices and provide a more efficient, accessible service to the public*	2013/14	Completed	
Improved process and education for other operational units to ensure better compliance with Part V approval under Environmental Planning Act (EPA) requirements	2013/14	Completed	
Investigate the use of e-lodgement process to include major development applications.	2013/14	Completed	Large development applications can be lodged electronically
Review a range of Council development related policies*	2012-16	Completed	Council report to be considered at 9 April 2014 meeting
Review current Landscape Policy*	2013/14	On Track	Draft review due in April 2014
Commence a review of the "Valleys Study"	2012-16	Deferred	The Valleys Study project has now been transferred to the Development and Rezoning team to complete in conjunction with the proposed Rural Lands Study
Improved information to developers	2013/14	On Track	A review of development policies has recommended the removal of irrelevant policies. Report to 9 April 2014 Council meeting. Further policies to be modified in Q4

*This target is a carry-over from the Wyong Shire Council 2012-16 Strategic Plan

2.7 Principal Activity 6 – Environment and Land Use

Council seeks to promote and plan for the sustainable use of natural resources on the Central Coast, especially focusing on managed development of all land whilst ensuring the natural environment remains protected, healthy and sustainable.

Budget Overview

Financial Performance 2013-14 Environment and Land Use	YTD Actual \$'000	YTD Budget \$'000	YTD Variance \$'000	Budget Full Year \$'000
Income (excluding capital)	2,523	2,391	132	2,946
Expenses	7,170	8,389	1,220	11,773
Net Operating Result	(4,647)	(5,999)	1,351	(8,828)
Capital Expenses	922	1,669	(747)	3,586

Performance Summary

The following summarises progress on activities identified for delivery under this principal activity.

Status	On Track	Off Track	Deferred	Completed	Total
Special Rate Variation	0	0	0	0	0
Major Project	0	0	0	1	1
Operational Activity	12	1	3	8	24
Total	12	1	3	9	25
%	48%	4%	12%	36%	100%

Highlights

Estuary Management Program recognition

Wyong Council was acknowledged for its estuary conservation communications campaign that sought to educate and inform the public about work and conservation efforts in Tuggerah Lakes. Council was listed as a finalist in the 2013 Government Communications Australia Awards. The campaign 'Love our Living Lakes' sought to increase knowledge and respect for the Lake's biodiversity and to change public attitudes and behaviours to encourage sustainable and responsible use of the Lakes.

Fire hazard reduction efforts

Council teamed up with Fire and Rescue NSW and the Rural Fire Service to undertake hazard reduction burning around Premier Ave and Morley Ave, Bateau Bay. The area had not been back burnt for 30 years. With the recommendation of the Rural Fire Service, Council also undertook works on bushfire asset protection zones in Watanobbi, Ourimbah and Toukley.

Flood Studies

Wyong Shire Council is studying how to help protect residents from floods and reduce the risk to future developments. Council is following the NSW Floodplain Development Manual, with support from the Department of Environment, Climate Change and Water. The aim is to produce risk management plans for each catchment in Wyong Shire. A grant-funded flood study is being conducted and is on schedule. Work progressed on the revision to the Floodplain Management Chapter of the Development Control Plan, in order to be ready for public exhibition.

Clean up Australia Day

Council had 20 registered clean-up sites and provided support packs for volunteers. The chemical Detox program also ran in conjunction with Clean Up Australia Day where residents were able to dispose of household chemicals safely. Council recorded 2.8 tonnes of rubbish picked up by our contractor Remondis. Registered sites included 22 community and 1 business site, as well as 27 schools independently arranging and participating in their own day.



Wrack removal

Council's wrack harvester has been active throughout February in the southern areas of Tuggerah Lake. A total of 300 cubic metres of wrack was collected in February. Altogether this financial year we have removed 7,000m³ of wrack from the lake system. Along with stream bank rehabilitation and gross pollutant traps, the health and amenity of the lakes system has improved.



Wrack harvester at work in Tuggerah Lake

Lake Munmorah Foreshore

Additional wrack is expected to be recovered by both the contract harvesters and the Lake Munmorah foreshore renourishment program which will hopefully help push the full year volumes over 10,000 cubic metres. This project is expected to be delivered during April 2014 and will greatly enhance the Lake Munmorah foreshore areas and promote greater recreational activity.

Soldiers Beach

A grant application has also been prepared under the Coastal and Estuary Management Grant program being administered through Department of the Office of Environment and Heritage. The grant outlines a proposed scope of works to undertake investigation, design and approval of foreshore stabilisation works in the vicinity of Soldiers Beach.

Gross pollutant traps

Works on gross pollutant traps were completed in Wirriga Avenue Charmhaven, Tuggerah Parade Long Jetty and Catalina Road San Remo. Dudley Street Lake Haven is near to completion.

Performance Targets

	Year of Action	Q3 Status	Q3 Comments
Waterways and Asset Management			
Major Projects			
Establishment of Waterways Service - Ensuring a corporate and community focus on local waterways both now and in the future with a focus on wrack removal and gross pollutant traps to ensure our lakes remain healthy and aesthetically pleasing, increasing their use by the community	2013/14	Completed	
Operational Activity			
Global Reporting Initiative Performance Indicator Environmental 13 - Habitats protected or restored. Metres of stream bank rehabilitated Subject to alignment with the Estuary Management Plan reporting requirements (subject to funding however maintenance schedules will continue)	2013/14	Completed	
Complete an adopted Asset Management Strategy by June in each financial year to apply for the following year	2013/14	Completed	
To improve WSC Asset Management Practices beyond core level to an appropriate advanced level by June 2014, by implementing relevant corporate tasks in the Asset Management Improvement Plan and reviewing progress by asset suppliers on individual asset classes in the AMIP*	2012-16	On Track	

	Year of Action	Q3 Status	Q3 Comments
Dredging works complete as per adopted Resourcing Strategy	2013/14	On Track	Dredging proposed to commence late April as per briefing of Tuggerah Lakes Committee
Required approvals for the wrack harvesting program and dredging program obtained by June 2014	2013/14	Completed	
Reviewed, adopted Coastal Management Plan and sent to the Office of Environment and Heritage by October 2013	2013/14	Deferred	Awaiting release of stage 2 coastal reforms prior to completion. Grant received from Office of Environment and Heritage recognises this
2 Gross Pollutant Trap maintenance activities as per Type 1 Gross Pollutant Traps	2013/14	On Track	
3 Gross Pollutant Trap maintenance activities as per Type 3 Gross Pollutant Traps	2013/14	Off Track	Delays by service provider, Roads and Drainage, in commencing works will result in 2 cleans per device
6 Gross Pollutant Trap renewed with improved more efficient and maintainable designs	2013/14	On Track	
Review progress in implementing Estuary Management Plan and update strategy by 30 June 2014	2013/14	Completed	
Complete 2 wetland maintenance activities (sediment zone dredging, waste sediment disposal, replacement planting) per constructed wetland	2013/14	On Track	
Complete three stream bank maintenance activities per constructed stream bank	2013/14	On Track	
Complete The Entrance Channel Flooding Impact Study in 2013/14*	2013/14	Completed	
Complete at least 4000 cubic metres (1000 tonne dry weight) of wrack harvesting	2013/14	Completed	
Complete Stage 2 of the Emergency Services review project. (as per WSC strategic plan 2013/17)*	2013/14	On Track	
Develop 10 year plan for maintaining Rural Fire Service (RFS) buildings in place*	2012-16	On Track	
Deliver Flood Risk Management Plan for Northern Catchments and Lake Macquarie*	2012-16	Deferred	
Deliver Flood Risk Management Plan for Tuggerah Lake Foreshore*	2012-16	On Track	
Deliver Flood Risk Management Plan for Wallarah and Spring Creek (Dependent on grant funding)*	2012-16	Deferred	
Deliver Flood Risk Management Plan for Wyong River*	2012-16	On Track	
Deliver Ourimbah Creek Catchment Floodplain Risk Management Plan*	2012-16	Completed	
Studies and Plans completed according to contractual work plan targets agreed by grant funding partners	2013/14	On Track	
Undertake Bathymetric study of major creek entrances in Tuggerah Lakes*	2013/14	Completed	
Water quality monitoring results are reported six monthly in an appropriate format that clearly demonstrates and explains progress in improving the waterways	2013/14	On Track	

*This target is a carry-over from the Wyong Shire Council 2012-16 Strategic Plan

2.8 Principal Activity 7 – Waste Management

Waste management is about providing a safe, reliable and environmentally responsible domestic and commercial waste collection, recycling and disposal services across the Shire. It also aims to help reduce the Shire's environmental footprint.

Budget Overview

Financial Performance 2013-14 Waste Management	YTD Actual \$'000	YTD Budget \$'000	YTD Variance \$'000	Budget Full Year \$'000
Income (excluding capital)	41,190	44,068	(2,878)	48,312
Expenses	23,653	28,122	4,469	40,565
Net Operating Result	17,537	15,946	1,591	7,747
Capital Expenses	3,702	5,054	(1,352)	8,369

Performance Summary

The following summarises progress on activities identified for delivery under this principal activity.

Status	On Track	Off Track	Deferred	Completed	Total
Special Rate Variation	0	0	0	0	0
Major Project	0	0	0	0	0
Operational Activity	7	0	1	1	9
Total	7	0	1	1	9
%	78%	0	11%	11%	100%

Highlights

Free chemical cleanout

Council teamed up with the Environmental Protection Agency (EPA) to give residents the opportunity to safely dispose of chemicals. Close to 3,000 tonnes of chemicals were collected during the detox. The service allows residents to drop off old paint, pesticide and other chemicals for free rather than pouring them down the drain or being left unattended in garages.

Illegal dumping

An illegal dumping awareness campaign was undertaken after a large amount of waste was found at Bonny Boy Way Gwandalan. Deterrents were put in place such as surveillance cameras, signage fencing and bollards. The public were asked to report dumping hot spots so that dumping sites could be better identified.



Litter prevention project

The EPA provided a \$30,000 grant to combat fishing related litter at The Entrance. Council is also working in conjunction with environmental action group Take 3 to clean up litter around The Entrance, including marine litter. Council is installing fishing litter bins called TAngler Bins.



Marine litter dragged out of The Entrance basin on Clean up Australia Day

Buttonderry Cell

Contractors are making good progress and lining works have now commenced on a new waste cell at Buttonderry Waste Management Facility. The new 40,000 square metre cell is the size of six football fields and holds 1.1 million cubic metres of waste. An administration building at Buttonderry will be constructed. A delegation from Vietnam visited Council's Buttonderry Waste Management facility on 14 March as part of a study tour of Australia. The delegation is involved in a project to build new waste water treatment plants, drainage systems and landfill sites in Vietnam. They had heard of our win in the Waste Management of Australia's Excellence in Landfill Awards.

Performance Targets

	Year of Action	Q3 Status	Q3 Comments
Waste Management (Commercial Enterprises)			
Operational Activity			
50% of domestic waste diverted from landfill	2013/14	On Track	50.7%
Domestic Waste Collection - 100% of registered premises provided with regular collection services	2013/14	Completed	100% of registered premises are provided with regular collection services
Develop and implement a program to move towards the NSW domestic waste diversion target of 66% resource recovery (or diversion from landfill) by 2014 by means of education, awareness, behavioural change programs, additional process initiatives and landfill operations, continue to explore opportunities through the Regional Waste Strategy between Gosford and Wyong*	2012-16	On Track	
Development Strategy for area 5 at BWMF*	2012-16	On Track	Optimisation program currently under way
Scheduled and programmed services to clean-up and monitor open spaces and roadsides	2013/14	On Track	
Develop a strategic plan for alternative waste technologies	2014/15	On Track	To be considered as part of Optimisation program
Soil processing facility operating by January 2014	2013/14	On Track	Negotiations continuing with operator
Gwandalan Tip - Stage 3.1 - Master Design, Environmental Impact Statement Studies and Lodgement of the Development Application	2013/14	On Track	Environmental Protection Authority approval being sought
Continue to explore opportunities through the Regional Waste Strategy between Gosford and Wyong*	2012-16	Deferred	

*This target is a carry-over from the Wyong Shire Council 2012-16 Strategic Plan

2.9 Principal Activity 8 & 9 – Roads and Stormwater

Delivery and maintenance of roads, bridges, footpaths, carparks, transport planning and traffic management in the Shire, along with the management of associated infrastructure to help ensure ease of travel and environmental responsibility (excluding RMS roads). Plus safe and reliable collection, transmission, treatment and discharge facilities for stormwater through an extensive network of engineered and natural drainage systems. This principal activity is an essential service provided by Council to the residents and visitors of the Shire.

Budget Overview

Financial Performance 2013-14 Roads and Stormwater	YTD Actual \$'000	YTD Budget \$'000	YTD Variance \$'000	Budget Full Year \$'000
Income (excluding capital)	10,238	9,760	477	12,385
Expenses	29,590	29,932	342	40,419
Net Operating Result	(19,352)	(20,172)	819	(28,034)
Capital Expenses	21,855	24,868	(3,012)	36,626

Performance Summary

The following summarises progress on activities identified for delivery under this principal activity.

Status	On Track	Off Track	Deferred	Completed	Total
Special Rate Variation	4	0	5	5	14
Major Project	0	0	0	0	0
Operational Activity	9	0	0	0	9
Total	13	0	5	5	23
%	56%	0%	22%	22%	100%

Highlights

Sportsground drainage

Drainage works at EDSACC North oval were completed in time for the winter sports season. The work was undertaken in partnership with Central Coast Football and Killarney District Soccer Club and means water will quickly disappear from the surface of the field during wet weather enabling the field to dry out faster after rain.

Major drainage works in Wyong CBD

Drainage works worth \$6.8 million have started in Wyong CBD. The area has a long history of flooding and the works will greatly reduce the future impact and help kick start redevelopment of the town centre. Drainage will facilitate the construction of the new Art House, the redevelopment of Frank Ballance Park and the construction of an Aldi supermarket on the Pacific Highway.

Major road works

Drainage and road upgrades are completed at Greenacre Ave Lake Munmorah. Warnervale Road upgrades were near to completion in March and the road was reopened in April. The \$3.27 million upgrade of Warnervale Road was done to prevent flooding and reduce the likelihood of accidents. Pre-construction activities on Ruttleys Road, Berkeley Road and The Ridgeway were on track in March. Council is spending a record \$36 million this financial year on our roads.



Ruttley's Road works on target

The Entrance sea wall stabilisation works

A 300 metre section of the popular foreshore at The Entrance is being stabilised. Section one was completed and fishers are happy with the new rod holders. It was discovered that the condition inside the sea wall is less dilapidated than originally anticipated, meaning that work may be completed sooner and cost less.

Performance Targets

	Year of Action	Q3 Status	Q3 Comments
Roads and Drainage			
Special Rate Variation Projects			
Anita Avenue at Agatha: Road Upgrade including stormwater drainage	2013/14	Completed	
Bay Road: Road Upgrade including stormwater drainage	2013/14	Deferred	Due to resources allocated to Wyong CBD drainage project this project deferred to 2014/15
Berkeley Road: Road Upgrade including stormwater drainage	2013/14	Deferred	Due to resources allocated to Wyong CBD drainage project this project deferred to 2014/15
Bumble Hill Guardrail: Road Safety Facilities.	2013/14	Completed	
Bunning Creek Road: Road Upgrade (Seal)	2013/14	Completed	
Elouera Ave: Road Upgrade with possible stormwater drainage	2013/14	Deferred	Project deferred to early 2014/15 due to commencement of Wyong CBD drainage project being accelerated
Goorama Ave: Road Upgrade/Renewal including stormwater drainage.	2013/14	Completed	
Panorama Ave/Hobson: Road Upgrade/Renewal with possible stormwater drainage 1	2013/14	Deferred	Due to resources allocated to Wyong CBD drainage project this project deferred to 2014/15
Saltwater Creek Killarney Vale timber footbridge replacement programme	2013/14	Deferred	Project deferred until 2014/15 to provide the funding necessary to complete the replacement of Tumbi Creek bridge at The Peninsula a year earlier than scheduled
Shire Wide bridge renewals	2013/14	On Track	
The Entrance Road disabled parking improvements: Road Safety Facilities	2013/14	On Track	
The Ridgeway (CH1100 CH1870): Road Upgrade and Renewal	2013/14	On Track	Works have commenced will be completed by May 2014 (Project now entirely grant funded - no SRV funding required)
Timber footbridge replacement programme - Peninsula	2013/14	On Track	
Tumbi Rd at The Ridgeway: Road Safety Facilities	2013/14	Completed	
Moala Parade Charmhaven Pavement Upgrade**	2013/14	Completed	Alternate SRV project completed
Mandalong Road Dooralong Upgrade **	2013/14	Completed	Alternate SRV project completed
Gascoigne Avenue Gorokan Pavement Upgrade**	2013/14	On Track	Alternate SRV project to be completed by 30 June 2014
Cornish Avenue Killarney Vale Pavement Upgrade**	2013/14	On Track	Alternate SRV project to be completed by 30 June 2014
Anne Findlay Place Bateau Bay Pavement Upgrade**	2013/14	Completed	Alternate SRV project completed
Wahroonga Road Kanwal Pavement Upgrade**	2013/14	Completed	Alternate SRV project completed
McPherson Road Mardi Pavement Upgrade**	2013/14	Completed	Alternate SRV project completed
Woolworths Way Warnervale Pavement Upgrade**	2013/14	Completed	Alternate SRV project completed
Sherry Street Tumbi Umbi Pavement Upgrade**	2013/14	Completed	Alternate SRV project completed
Cuthbert Road Killarney Vale Pavement Upgrade**	2013/14	Completed	Alternate SRV project completed
Heador Street Toukley Pavement Upgrade**	2013/14	Completed	Alternate SRV project completed
Malana Avenue Bateau Bay Pavement Upgrade**	2013/14	Completed	Alternate SRV project completed
Woolana Ave Halekulani Pavement Renewal**	2013/14	On Track	Alternate SRV project to be completed by 30 June 2014
Greenacre Ave Lake Munmorah**	2013/14	On Track	Alternate SRV project to be completed by 30 June 2014
Thompson Road Toowoomba Bay Upgrade**	2013/14	On Track	Alternate SRV project to be completed by 30 June 2014
Operational Activity			
1,000 metre of shared pathways constructed per annum - Measures annual growth of the shared pathway system (length of constructed cycleway is influenced by terrain, grant funding and Council funds allocated to the deliver the service)	2013/14	On Track	
Provide average pavement condition index >6.5 (industry standards) as a measure of the road quality	2013/14	On Track	
The average pavement condition index of >7	2015/16	On Track	

	Year of Action	Q3 Status	Q3 Comments
(industry standards) as a measure of the road quality			
Develop Rural Roads Policy	2013/14	On Track	Policy will clarify ownership and ongoing maintenance arrangements for the unsealed and often unformed road network
Develop and implement formal Boundary and Adjacent Roads Agreements in association with Gosford City, Cessnock, and Lake Macquarie City Councils which define responsibilities, promote cooperation, provide equity, and improve service efficiency*	2013/14	On Track	Currently in negotiations with Gosford City Council to update both the Boundary and Adjacent Roads Agreements
Collection of automated road condition data on >15% of the road network per annum	2013/14	On Track	
Develop a new shared pathway capital works project priority listing	2013/14	On Track	Developing an assessment process to permit identified works to be prioritised so that the high benefit works are completed first
10% of drainage systems inspected and returned to its original design capacity per annum	2013/14	On Track	
Implement strategic capital works programming for drainage assets using asset management systems	2013/14	On Track	Currently using closed circuit cameras to assess the condition of the piped drainage network. This information will be used develop future works programs

*This target is a carry-over from the Wyong Shire Council 2012-16 Strategic Plan

**Alternate SRV project – not included as part of the 270 performance targets and actions

2.10 Principal Activity 10 & 11 – Sewerage Services and Water Supply

Sewerage Services provides safe and reliable collection, storage, treatment and disposal facilities for sewage in a cost-effective and sustainable manner. Water Supply provides safe and reliable water services including the collection, storage, transportation, treatment and distribution of water at a standard appropriate to its use, in a cost-effective and sustainable manner.

Budget Overview

Financial Performance 2013-14 Sewerage Services and Water Supply	YTD Actual \$'000	YTD Budget \$'000	YTD Variance \$'000	Budget Full Year \$'000
Income (excluding capital)	63,307	64,906	(1,600)	73,789
Expenses	61,187	62,770	1,582	81,573
Net Operating Result	2,119	2,136	(17)	(7,784)
Capital Expenses	7,823	9,834	(2,011)	16,177

Performance Summary

The following summarises progress on activities identified for delivery under this principal activity.

Status	On Track	Off Track	Deferred	Completed	Total
Special Rate Variation	0	0	0	0	0
Major Project	0	0	1	0	1
Operational Activity	5	2	0	2	9
Total	5	2	1	2	10
%	50%	20%	10%	20%	100%

Highlights

Water meter replacement

More than 12,000 water meters are being replaced across Wyong Shire as part of a major upgrade program. The \$1.48 million project will ensure Council meets its compliance responsibilities under the National Measurement Acts and Regulations, by replacing aging meters. Council has contracted Select Solutions Group to get the huge project rolled out as quickly as possible

Mardi Dam

Works are complete on the intake tower; the outlet has been demolished and dam levels have recovered. Council undertook this work to ensure the structural integrity of the dam wall. The tower was replaced as part of the Mardi suite of works in 2010. The project gained exposure in a number of national and international engineering publications for its novel approach to demolition; water was able to be left inside the dam while demolition works were happening.

Water mains repairs

A 40 tonne crane was brought in to repair a leaking water main in the suspended pipe crossing at Lees Bridge Ourimbah Creek on Chittaway Point Road. Council undertook work to replace broken stop valves and fittings in mains which required turning off water to over 200 houses. Affected residents were advised to store enough water for a day's worth of cooking and drinking.



Replacing the gasket in a leaking water main at Lees Bridge

World Water Day

Gosford City and Wyong Shire Councils marked World Water Day by showcasing the region's improved water supply system to local school students. Erina High School students walked across the wall of Mangrove Creek Dam to see first-hand the significant rise in water levels, followed by a tour of infrastructure upgrades at Somersby Water Treatment Plant and Kincumber Sewage Treatment Plant. This year's film Central Coast Water – the water treatment process, gives a behind the scenes look at how this essential service is managed and delivered to homes. This year's theme was 'Water Cooperation'.

Council supports dialysis users

Council is providing concessions on water use for customers managing the treatment of kidney disease with dialysis machines. The policy was revised in March to reflect the different types of medical use. The concessions allow kidney patients to manage their treatment at home without the extra burden of large water bills.

Performance Targets

	Year of Action	Q3 Status	Q3 Comments
Water and Sewerage			
Major Projects			
Central Coast Water Corporation and Joint Services Business Establishment - The management of the supply of water and sewerage services for the Central Coast Region, supported by a combined, Wyong Shire Council and Gosford City Council Joint Services Business. This service will provide essential administration services and operating efficiencies to the Central Coast Water Corporation and both Councils.	2013/14	Deferred	Central Coast Water Corporation and Joints Services Project remains on hold
Operational Activity			

	Year of Action	Q3 Status	Q3 Comments
100% compliance against the health related criteria of the Australian drinking water guidelines	2013/14	On Track	
95% customer satisfaction with sewerage service	2013/14	Completed	
95% of customer satisfaction with water supply service	2013/14	Completed	
Global Reporting Initiative Performance Indicator Environmental 10 - Percentage and total volume of water recycled and reused. The estimated quantity of tertiary treated recycled water that is produced and distributed for non-potable purposes	2013/14	Off Track	Due to regulatory changes the use of reclaimed water by water carriers ceased on 31 March 2014. Council is re-evaluating all reclaimed water schemes to determine whether compliance with the new regulations is economically possible. This will result in a lower volume of reclaimed water used
Global Reporting Initiative Performance Indicator Environmental 21 - Total water discharge by quality and destination. The combined total estimated discharge of secondary treated effluent sent to ocean outfalls and tertiary treated effluent for non-potable	2013/14	On Track	Annual figure to be reported in Quarter 4
Global Reporting Initiative Performance Indicator Environmental 8 - Total water withdrawal by source. Estimated quantity of water sourced from local water supplies (Wyong River/Ourimbah Creek) and transferred to Mardi Water Treatment Plant	2013/14	On Track	Annual figure to be reported in Quarter 4
Council to ensure less than nine water main breaks per 100km of Council's mains (not associated with third party damage)	2013-17	Off Track	The End of Financial Year total may exceed the target due to the initial high water main breakage rate associated with the National Broadband Network roll-out
Implementation of revised operating strategy to maintain water quality, asset management and customer service in view of increasing population, asset age and regulatory changes*	2012-16	On Track	
100% compliance with Environmental Protection Authority licensing requirements for the quality of secondary treated effluent that is discharged to the ocean	2013/14	On Track	

*This target is a carry-over from the Wyong Shire Council 2012-16 Strategic Plan

2.11 Principal Activity 12 – Administration (shared services)

Administration (shared services) provides corporate-wide internal services and is accountable for the governance, statutory compliance, finance, human resources and the management of all corporate information for the organisation.

Budget Overview

Administration includes services and products that are included in Corporate Overheads and recharged across the remaining principal activities.

Financial Performance 2013-14 Administration	YTD Actual \$'000	YTD Budget \$'000	YTD Variance \$'000	Budget Full Year \$'000
Income (excluding capital)	76,882	76,900	(18)	80,363
Expenses	1,234	(1,736)	(2,969)	181
Net Operating Result	75,648	78,636	(2,987)	80,182
Capital Expenses	371	1,703	(1,331)	2,125

Performance Summary

The following summarises progress on activities identified for delivery under this principal activity.

Status	On Track	Off Track	Deferred	Completed	Total
Special Rate Variation	1	1	0	0	2
Major Project	2	0	0	0	2
Operational Activity	34	2	4	0	40
Total	37	3	4	0	44
%	84%	7%	9%	0%	100%

Highlights

Student scholarships and internships

Council awarded twelve local university students with education support scholarships and internships. The Scholarship and Internship programs provide financial support while allowing participants to gain invaluable work experience prior to completing their degrees.



Last year's students awarded for completing the program

WorkCover Audit

WorkCover audits are routinely carried out at Council. The most recent audit of Council's practices was completed with no adverse findings. The audit of Open Space Public Tree team and Karinya Care and Education Centre received high scores for process control and management responsibility. The audit demonstrated the effectiveness of our Work Health and Safety Management System in meeting legislative requirements.

e-Business Paper

Council introduced electronic business papers saving an estimated \$26,000 per year. The electronic version of Council Business Papers and Minutes, as well as archived records, is located on Council's webpage and Councillors will access them electronically during Council meetings. The transition will see substantial savings in resources like preparation, printing and courier costs, as well as having an environmental benefit. It also allows the business papers to appear in a flexible format capable of containing hyperlinks and other digital media.

Performance Targets

	Year of Action	Q3 Status	Q3 Comments
Contract and Project Management			
Major Projects			
Capital Works Program - Renewal and upgrade projects that address the current asset maintenance gap while also delivering on new high usage assets such as completing the gap in the North Entrance cycleway to enhance accessibility	2013/14	On Track	Council's Capital Expenditure Committee meets regularly to ensure projects are being delivered according to plans
Operational Activity			
80% of all contracts managed by the Contract and Project Management Service Unit are to be completed within budget	2013-17	On Track	
95% compliance with goods and services requested and processed within 48 hours of receipt of order	2013/14	On Track	
Optimise store inventory, ensuring total value is maintained at <\$1 million	2013-17	On Track	
Commence baseline monitoring for Porters Creek Stormwater Harvesting Scheme and Precinct 7A by 30 June 2013*	2013/14	On Track	There is a Project Control Group for this work, chaired by the General Manager. The bulk of the work for this product is scheduled for the first half of 2014. A consultant has been engaged to review the modelling of the wetlands' hydrology and ecology. The results will allow a review of the current plan
Finance			
Special Rate Variation Projects			
Finance Technology upgrades to improve organisation productivity and efficiency and service quality	2013/14	Off Track	
Major Projects			
Managing outcomes of the Special Rate Variation - Create financial sustainability and enhance the standard of assets and reduce Councils asset backlog.	2013/14	On Track	Council's Capital Expenditure Committee, in its regular meeting, reviews the progress of SRV projects. Where an SRV project is experiencing delays other projects which are ready for delivery are brought forward.
Operational Activity			
Agreed productivity gains are identified and achieved with gains or offset recorded against the business of Council	2013-17	On Track	
Building and infrastructure renewals ratio of >1%	2013-17	On Track	Annual Ratio that will be completed post 30 June 2014
Debt Service Ratio of <15%	2013-17	On Track	Annual Ratio that will be completed post 30 June 2014
Rate coverage ratio of 50%.	2013-17	On Track	Annual Ratio that will be completed post 30 June 2014
Rates outstanding percentage of <5%	2013-17	On Track	Annual Ratio that will be completed post 30 June 2014
The organisation achieves 100% budgeted target revenue	2013-17	On Track	Annual Ratio that will be completed post 30 June 2014
The organisation achieves within + / - 1% of actual expenditure budget at year end	2013-17	On Track	Annual Ratio that will be completed post 30 June 2014
The organisation completes 80% of all projects on time and within budget	2013-17	On Track	Annual Ratio that will be completed post 30 June 2014
The organisation to achieve 1% saving in operational (salaries and wages) budgeted expenditure for each service unit for actual expenditure	2013-17	On Track	Annual Ratio that will be completed post 30 June 2014
Unrestricted current ratio >1.5%	2013-17	On Track	Annual Ratio that will be completed post 30 June 2014
<12,000 assessments in arrears	2013/14	On Track	Annual Ratio that will be completed post 30 June 2014
100% compliance with IP&R guidelines & LG Act (including Community Strategic Plan, 4 year Delivery Program, Resourcing Strategy, one year Operational Plan and Annual Report)	2013/14	On Track	

	Year of Action	Q3 Status	Q3 Comments
Refine the integrated planning process through benchmarking and best practice*	2012-16	On Track	
Human Resources			
Operational Activity			
Lost Time Injury Frequency Rate (LTIFR) - Minimum achievement of set targets for lost time injuries of < 24.81 per million hours (organisational)	2013/14	Off Track	28.43. This is due to slightly higher number of injuries compared to this quarter last year and a reduction in the total number of hours worked across the organisation (reduced overtime, more leave taken).
Permanent Staff Turnover at <10%	2013/14	On Track	Currently 6%
Individual Action: Central Coast Water Corporation HR Coordination	2013/14	Deferred	Central Coast Water Corporation project on hold as per Council resolution
WHS - 3 System Audits	2013/14	On Track	
WHS - 30 Inspections	2013/14	On Track	
WHS - 30 Observations	2013/14	On Track	
WHS - 40 Compliance Audits	2013/14	On Track	
All incidents entered into SafeTsmart on day of notification. Volume depends on incidents occurring. Estimate of 220 Incidents per year (based on 2010/11)	2013/14	On Track	
Maintain Drug & Alcohol testing program	2013/14	On Track	
Streamline process after new Performance Management system and Salary Grading system are in place*	2013/14	Deferred	Online piece of this activity was removed due to budget not being allocated but new process will be rolled out by end of 30 June 2014
Information Management			
Special Rate Variation Projects			
Information Technology upgrades to improve organisation productivity and efficiency and service quality	2013/14	On Track	
Operational Activity			
85% of the organisations service requests are assessed within the required timeframes (organisational)	2013-17	Off Track	Community and Recreation Services 76.91%, Infrastructure and Operations 70.53%, Development and Building 79.61%, Property and Economic Development 80.52%, General Manager 96.92%
Wyong Shire Loyalty System*	2012-16	On Track	
Legal and Governance			
Operational Activity			
Implement a comprehensive policy for the management of complaints	2013/14	On Track	
Develop and maintain an interactive register of legislative provisions that apply to or have impact upon Council by March 2013*	2013/14	Deferred	Pending imminent release of software package by Local Government Legal
Establish an interactive intranet site that provides useful information to staff and councillors about legislation that applies to Council	2013/14	Deferred	As above
Liaise with other nearby local councils to develop synergy in internal processes, to allow for seamless secondments of in-house solicitors between councils to meet unusual periods of demand	2014/15	On Track	
Improve compliance and statutory timeframes by 20% under the Government Information (Public Access) Act 2009*	2012-16	On Track	
Ensure compliance with all relevant legislation - review claims to ensure compliance, ensure an investigation is carried out within 5 days for each claim received, ensure all claims and possible public liability claims are reported to our insurers, ensure Units are informed of insurers decisions within 5 business days.	2013/14	On Track	
Provide steps for injured workers/supervisors/managers that will encourage a safe & durable return to work for the injured worker in a reasonable period of time.	2013/14	On Track	

	Year of Action	Q3 Status	Q3 Comments
Conduct Local Government Election and associated processes	2016/17	On Track	
Determine Contract for Local Government Election provision	2015/16	On Track	
Develop a new Councillor induction	2016/17	On Track	
New Code of Conduct to be released by DLG	2013/14	On Track	

**This target is a carry-over from the Wyong Shire Council 2012-16 Strategic Plan*

3.

Quarterly Budget Review Statement

3.1. Responsible Accounting Officer's Statement

Report by Responsible Accounting Officer

The following statement is made in accordance with Clause 203(2) of the Local Government (General) Regulations 2005.

It is my opinion that the Quarterly Budget Review Statement for Wyong Shire Council for the quarter ended 31 March 2014 indicates that Council's projected financial position at 30 June 2014 will be satisfactory at year end, having regard to the projected estimates of income and expenditure and the original budgeted income and expenditure.



Stephen Naven
Responsible Accounting Officer

28 May 2014

3.2.

Operating Result

Consolidated

Financial Performance 2013-14	Last Year Actual 2012-13 \$'000's	YTD Actual 2013-14 \$'000	YTD Budget 2013-14 \$'000	YTD Variance 2013-14 \$'000	Full Year Budget 2013-14 \$'000
Income (including capital)	248,427	213,756	214,725	(969)	245,374
Expenses	226,006	163,766	173,100	9,334	236,505
Net Operating Result	22,421	49,990	41,625	8,365	8,869
Income from Capital items	15,115	7,084	4,513	2,571	11,213
Net Operating Result before capital income	7,305	42,906	37,112	5,794	(2,344)

Note: Budget above represents Q2 adopted budget figures

The year to date (YTD) operating result (including capital income) is favourable to budget by \$8.4 million, with income below budget by \$1.0 million and expenditure under budget by \$9.3 million. The year to date surplus excluding capital income is favourable to budget by \$5.8 million.

The unfavourable operating income variance relates to lower than anticipated user charges and fees revenue for tipping and water consumption. The favourable expenditure variance relates to timing differences with materials and contracts expenditures offsetting the revenue variations.

Attachment 4.7 lists the proposed budget amendments identified during Q3 that demonstrates Council's commitment to delivering current services within an improved full year targeted operating surplus of \$1.2 million.

The detailed financial reports can be found on Attachments 4.1 through to 4.5 at the end of this document, while the following pages provide an analysis of the Q3 results.

Income Analysis

Based on the result at 31 March 2014, income (including capital) is below budget by \$1.0 million. Analysis of this variation is below.

Income from Continuing Operations	Last Year Actual 2012-13 \$'000	YTD Actual 2013-14 \$'000	YTD Budget 2013-14 \$'000	YTD Variance 2013-14 \$'000	Full Year Budget 2013-14 \$'000
Rates & Annual Charges	135,675	142,079	142,090	(11)	142,282
User Charges & Fees	57,502	41,777	45,750	(3,973)	61,626
Interest and Investment Revenue	9,271	7,049	7,485	(436)	9,947
Other Revenue	4,083	3,780	3,234	546	4,784
Grants & Contributions Operating	25,953	11,855	11,538	317	15,099
Grants & Contributions Capital	15,115	7,084	4,513	2,571	11,213
Gain from the Disposal of Assets	828	132	115	17	423
Total Income from Continuing Operations	248,427	213,756	214,725	(969)	245,374

Note: Budget above represents Q2 adopted budget figures

Rates and Annual Charges

Rates & Annual Charges actual revenue is aligned to budget expectations.

User Charges & Fees

User Charges & Fees income is unfavourable year to date by \$4.0 million based on actual income of \$41.8 million compared to a year to date budget of \$45.8 million. This variation relates primarily to the following:

- Tipping volumes are lower than anticipated creating a \$2.6 million unfavourable variance to budget due to reduced tonnages being received at Buttoderry Waste Management Facility. This is partially offset by reduced expenses directly attribute to EPA levy payments and related operating costs. Initiatives to increase revenue are in progress however full recovery of this shortfall is not expected this financial year and net adjustments are proposed in Attachment 4.7 of this quarterly review.

- Water consumption is less than expected by \$0.7 million due to timing differences associated with seasonal usage and billing cycles associated with the large meter replacement program. It is anticipated that recovery of this variance will occur over the remainder of the financial year.
- Sewerage service and trade waste charges are also less than budget by \$0.6 million due to timing differences associated with the billing cycles that will be corrected during the next quarter. This income category has also been impacted by the introduction of a discharge allowance and abolishment of usage charge for residential multi-premises by the Independent Pricing and Regulatory Tribunal (IPART).

Interest & Investment Revenue

Interest & Investment Revenue is \$0.4 million unfavourable to budget year to date due to lower than planned returns on investments (due to low interest rates). Yields on the cash and investment portfolio will continue to be monitored and maximised in an endeavour to achieve the projected full year income estimates. Please refer to section 3.4 Cash and Investments for further information on Council's cash management outcomes.

Other Revenue

Other Revenue is slightly favourable against budget year to date by \$0.5 million due to higher than normal royalty payments being received for gas extraction at Buttonderry Waste Management Facility as well as unplanned chargeable external works occurring related to water and sewer activities (partially offset by costs of external works).

Grants & Contributions Operating

Operating Grants & Contributions income is slightly favourable compared to budget year to date by \$0.3 million attributed to timing differences with the Local Infrastructure Renewal Scheme loan subsidy that has now been fully received as well as timing differences associated with bushfire prevention and flood study grants.

Grants & Contributions Capital

Capital Grants & Contributions income is \$2.6 million favourable to budget year to date. The majority of this relates to timing differences associated with developer contributions that are irregular, and the roads to recovery grant that was received in March and expected in May.

Gain from the Disposal of Assets

Gain from the Disposal of Assets is in line with year to date budget expectations. The full year budget includes a gain on sale of \$0.3 million from land sales, phased to occur in June 2014. It is proposed to remove this from the annual budget as part of the Q3 Review as no land sales are forecast to occur prior to the end of the financial year.

Expenditure Analysis

As at 31 March 2014, operating expenditure is under budget by \$9.3 million. Analysis of this variation is below.

Expenses from Continuing Operations	Last Year Actual 2012-13 \$'000	YTD Actual 2013-14 \$'000	YTD Budget 2013-14 \$'000	YTD Variance 2013-14 \$'000	Full Year Budget 2013-14 \$'000
Employee Costs	75,222	56,321	58,126	1,805	79,146
Borrowing Costs	16,741	11,499	11,642	143	17,859
Materials and Contracts	48,418	29,330	34,620	5,290	49,527
Depreciation	52,678	41,052	40,966	(86)	54,957
Other Expenses	30,264	24,904	27,304	2,400	34,430
Loss from the Disposal of Assets	2,683	660	442	(218)	586
Total expenses from Continuing Operations	226,006	163,766	173,100	9,334	236,505

Note: Full year budget above represents Q2 adopted budget figures

Employee Costs

Employee Costs are favourable to budget with year to date actual expenditure less than the year to date budget by \$1.8 million. This variance is primarily due to lower than anticipated wage costs due to vacancies. It is anticipated that there will be permanent full year savings realised by the end of the financial year.

Borrowing Costs

Borrowing Costs are slightly favourable to budget by \$0.1 million due to delays associated with the loan drawdown for the Local Infrastructure Renewal Scheme now expected to occur during the fourth quarter.

Materials and Contracts

Materials and contracts year to date expenditure of \$29.3 million is under budget by \$5.3 million when compared to the year to date budget of \$34.6 million. This favourable variation is predominantly the result in timing differences associated with large projects across the General Manager's department and Property and Economic Development department, including the Waste business activity. Delivery programs and operational deadlines have been revised as part of this quarterly review and changes are proposed in Attachment 4.7.

Depreciation

Depreciation expense year to date is \$0.1 million unfavourable to budget, which represents 0.16% of the full year annual budget (\$55.1 million). A proposed budget transfer is included in this report to re-align depreciation budgets between asset categories in line with latest depreciation forecasts. Depreciation forecasts are impacted by the timing of works delivery and therefore re-alignment on a quarterly basis is normal.

Other Expenses

Other expenses are favourable year to date by \$2.4 million due to lower than expected EPA levy payments and lower premiums negotiated on industrial special risk insurance, both permanent differences are proposed as adjustments to the full year budget in this report.

Loss from the disposal of assets

Loss from the disposal of assets is unfavourable by \$0.1 million based on year to date actual losses of \$0.6 million compared budget of \$0.5 million. This variation is minor and relates to the timing of plant and fleet asset retirements and the amounts currently being received on disposal.

By Fund

Net operating results before capital grants and contributions at a consolidated level resulted in a year to date favourable variance to budget of \$5.8 million attributed to each Fund as follows:

- General Fund - \$4.8 million favourable variance;
- Water Fund - \$3.5 million favourable variance; and
- Sewer Fund - \$2.5 million unfavourable variance

Net Operating Result	Last Year Actual 2012-13 \$'000	YTD Actual 2013-14 \$'000	Original Budget 2013-14 \$'000	Approved Changes Q1* & Q2 \$'000	Revised Budget 2013-14 \$'000	Proposed Changes for Council \$'000	Projected Full Year 2013-14 \$'000
By Fund							
General Fund	19,153	38,319	191	5,508	5,699	2,857	8,556
Water Fund	(8,498)	730	(5,251)	(5,144)	(10,395)	3,657	(6,738)
Sewer Fund	(3,350)	3,857	2,716	(364)	2,352	(3,017)	(665)
Net operating result before capital items	7,305	42,906	(2,344)	0	(2,344)	3,497	1,153
General Fund	29,633	42,884	10,785	2,282	13,067	2,128	15,195
Water Fund	(5,376)	2,255	(2,314)	(5,348)	(7,662)	3,657	(4,005)
Sewer Fund	(1,836)	4,851	3,829	(364)	3,465	(2,430)	1,035
Net operating result including capital items	22,421	49,990	12,300	(3,430)	8,870	3,355	12,225

* Includes changes related to the organisational restructure

Details of the proposed Changes for Council listed above are contained in the Proposed Budget Amendments table at Attachment 4.7.

General Fund

The year to date net operating result before capital items for General Fund is \$38.3 million compared to a year to date budget result of \$33.5 million producing a favourable variation of \$4.8 million. The most significant variations relate to:

- User Charges and Fees revenue unfavourable by \$2.5 million attributed directly to lower than planned tipping volumes being received at Buttonderry Waste Management Facility.
- Employee costs favourable \$1.9 million due to lower than anticipated wage costs due to vacancies. It is anticipated that there will be permanent full year savings realised by the end of the financial year.
- Materials and Contracts expense (including internal items) favourable by \$2.7 million. The key driver for this variance relates to reduced costs for Waste activities, however expenditure across all units in general fund are tracking favourable to budget primarily due to timing differences associated with large projects. Phasing of project expenditures has been revised as part of this quarterly review.
- Other Expenses favourable by \$2.5 million predominantly within the Waste unit due reduced EPA levy expenses as a direct result of decreased tonnages being disposed at the waste management facility.

Other variances impacting the operating result relate to Capital Grants and Contributions income which is favourable \$2.1 million primarily due to timing differences associated with developer contributions expected to align with full year budgets over the balance of the year.

Water Supply Authority (WSA)

The original full year operating budget for WSA (Water and Sewer Funds) was a total deficit of \$2.5 million, before capital income, which was revised after the Q2 review to a full year operating deficit of \$8.0 million. The proposed budget changes for Water and Sewer Funds in this Q3 review improve the projected full year result by \$0.6 million (excluding capital income) to a deficit of \$7.4 million.

The proposed changes by category are identified on the Budget Review Statement at Attachment 4.2.

Proposed adjustments to the operating result relate to savings in depreciation of \$0.2 million and materials and contracts \$0.4 million.

For more details on each Fund please refer to the sections below on the Water Fund and Sewer Fund.

Operating deficits in the WSA impact the overall consolidated operating result of Council. Council will continue to review its operations for further cost containment strategies however there are limits to such strategies before

services are impacted. Council will continue to monitor the performance of the WSA and has already raised concerns with the Independent Pricing and Regulatory Tribunal (IPART), the responsible body for setting the prices for water, sewerage and drainage services that are insufficient to recover Council's costs of operations.

Water Fund

The year to date net operating result before capital items for Water Fund is a surplus of \$0.7 million compared to a year to date budget deficit of \$2.7 million producing a favourable variation of \$3.5 million. The most significant variations relate to:

- User Charges and Fees income unfavourable by \$0.7 million due to a timing difference between the actual income and budgeted phasing for water usage. Compared to last year, production of water is around 5%-10% higher, and this is beginning to be reflected in water meter reading data. It is anticipated that water usage income will continue to improve in the last quarter with full year income forecast to align with budget.
- Borrowing costs favourable by \$0.4 million offset in Sewer Fund due to a misalignment that is being corrected as part of this review.
- Materials and Contracts favourable by \$3.7 million as a result of actual Corporate Overheads charged being substantially less than budget (\$3.2 million).

Sewer Fund

The year to date net operating result before capital items for Sewer Fund is a surplus of \$3.9 million compared to a year to date budget surplus of \$6.3 million producing an unfavourable variation of \$2.5 million. The most significant variations relate to:

- User Charges and Fees unfavourable by \$0.7 million related to sewerage service and trade waste charges due to timing differences associated with the billing cycles that will be corrected during the fourth quarter.
- Borrowing costs are unfavourable by \$0.4 million offset in Water Fund due to a misalignment that is being corrected as part of this review.
- Materials and Contracts are unfavourable by \$1.1 million. The majority (\$0.7 million) is a result of actual Corporate Overheads being higher than budgeted (due to Sewer Fund operating expenses being higher than budget). The remaining \$0.2 million variance is due to the commencement of the sludge dewatering project and is being corrected by a budget adjustment in this Q3 review.

By Function – Business Activity

Net operating results by reportable Business Activity are shown in the following table.

Net Operating Result By Function	Last Year Actual 2012-13 \$'000	YTD Actual 2013-14 \$'000	Original Budget 2013-14 \$'000	Approved Changes Q1 & Q2 \$'000	Revised Budget 2013-14 \$'000	Proposed Changes for Council \$'000	Projected Full Year 2013-14 \$'000
Waste Management	17,081	20,533	14,149	(293)	13,856	(510)	13,346
Holiday Parks	1,586	2,145	1,901	478	2,379	(461)	1,918
Care and Education	123	86	417	(8)	409	-	409

Note: Figures exclude Corporate Overheads and Tax Equivalent Payments

Waste Management

The year to date net operating result (before corporate overheads and tax equivalents) for Waste Management is a surplus of \$20.5 million aligned to budget. Variations relate to the following:

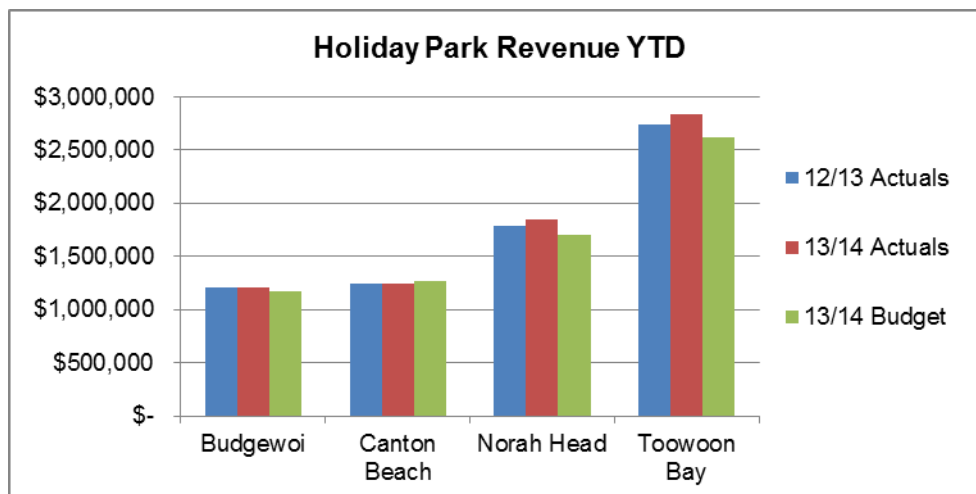
- External user charges and internal tipping fees unfavourable \$2.6 million due to higher tipping fees (driven predominantly by the higher EPA levy) resulting in lower than anticipated volumes being received at Buttonderry Waste Management Facility.
- Other Revenues favourable \$0.2 million due to higher than normal royalty payments (as a result of positive spot rates) being received for gas extraction.
- Materials & Contracts favourable \$1.2 million. Variable costs across the Waste business are being managed down as a result of the falling tonnages being processed at the Buttonderry waste facility, such as reduced hire of plant and equipment.
- Other Operating Expenses favourable \$1.3 million. Falling tonnages at the Buttonderry Facility, combined with approved material re-use are resulting in lower EPA levy expense.

Council continues to investigate options to both increase tipping revenues and reduce variable expenses in the business. Budget adjustments proposed in this report include reflection of the full year income forecasts associated with the reduced tipping trend, predominantly offset by reduced EPA levy costs and reduced costs related to updated escalation forecasts for remediation of closed landfill sites.

Holiday Parks

The year to date net operating result (before corporate overheads and tax equivalents) for Holiday Parks is a \$2.1 million surplus compared to year to date budgeted surplus of \$2.0 million, producing a favourable variation of \$0.1 million. Variations relate to the following:

- Revenue is favourable by \$381k and is itemised by park on the graph below.

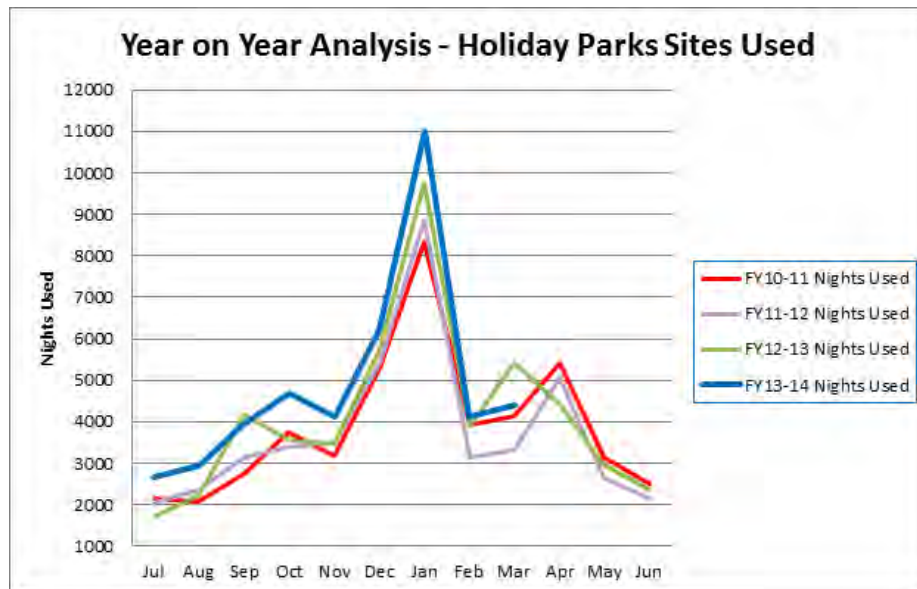
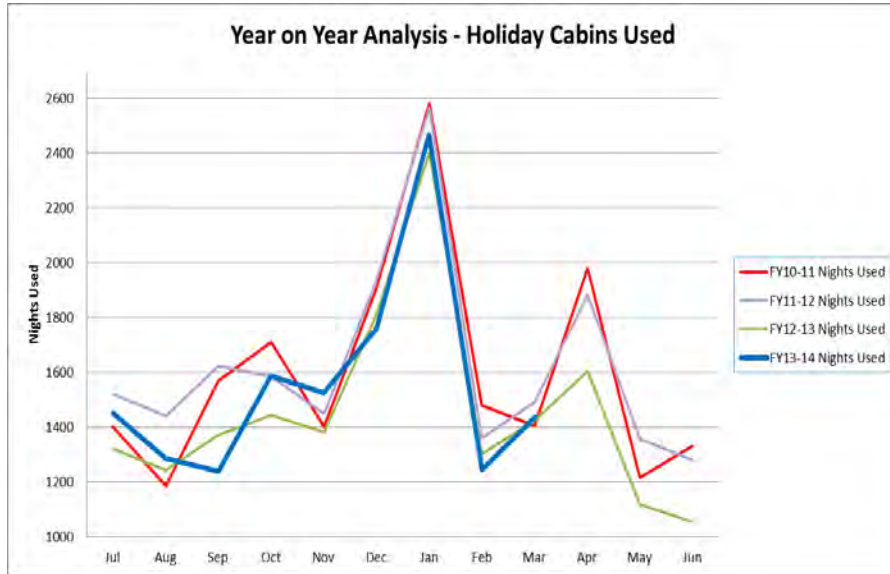


- Materials and Contracts are favourable by \$156k due to reduced spending in maintenance activities expected to increase over the next few months.
- Other Operating Expenses are unfavourable by \$338k due to higher than expected commission payments being made to the park management entity as a result of higher returns. Electricity costs are also unfavourable and will be monitored with seasonal usage.

The proposed budget adjustments contained in this report include increased revenue projections as well as additional associated commission payment costs, based on full year operating forecasts. The significant proposed change however relates to legal expenses for the settlement associated with finalisation of a contractor dispute.

According to Destination NSW (December 2013) research on Travel to Central Coast indicates that holiday or leisure nights were down to 50.7% for the year ended December 2013, compared to 56.5% for the year ended December 2012. Research also showed that staying with friends or relatives is the most popular accommodation used for nights in the region at 48.8%.

The year to date (March) cabin nights are up by 289 nights compared to the same period last year, however powered sites have increased by 4,109 nights. This trend is provided on the graphs below:



Marketing initiatives for holiday parks conducted during Q3 relate to the following:

- All Parks were featured in Destination NSW's 'Getaway to the Central Coast' digital marketing campaign which ran from 8 October 2013 – 28 February 2014. Other campaigns CCHP participated in and received great exposure from included; Daily Telegraph's Best Weekends Guide for the Central Coast, CCIA NSW / Destination NSW Caravan & Camping Digital campaign and Holidays with Kids Caravan & Camping digital campaign.
- Continued exposure during the peak holiday period at Wyong Shire beaches with the Central Coast Holiday Park (CCHP) logo featured on all lifeguard uniforms and also on lifeguard vehicles and boards. The CCHP logo is also featured on lifeguard towers.
- CCHP ran a Last Minute Camping Sale that successfully increased site bookings during January.

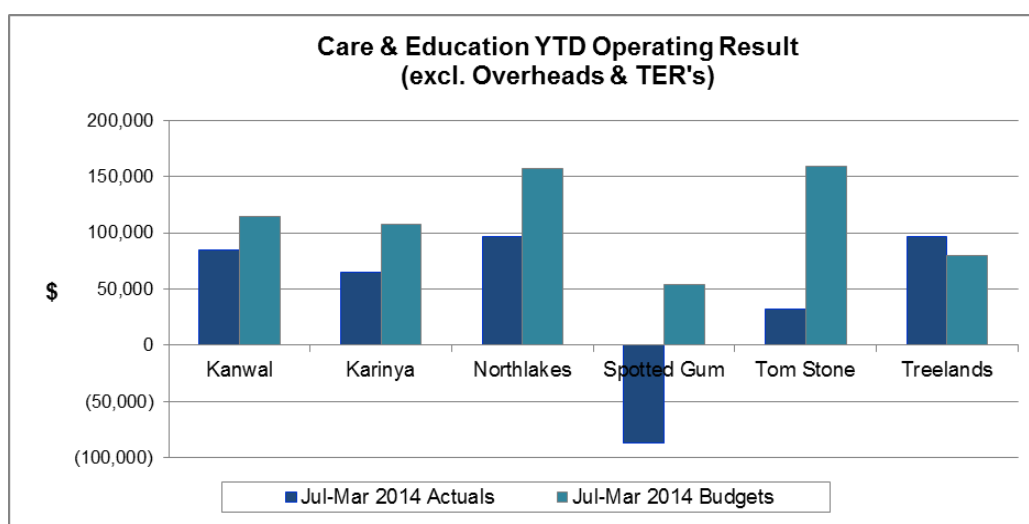
Care and Education (including Vacation Care)

The year to date operating result for Care and Education (before corporate overheads and tax equivalents) is a surplus of \$86k compared to a year to date budgeted surplus of \$397k producing an unfavourable variation of \$311k.

Care and Education Operating Results are as follows:

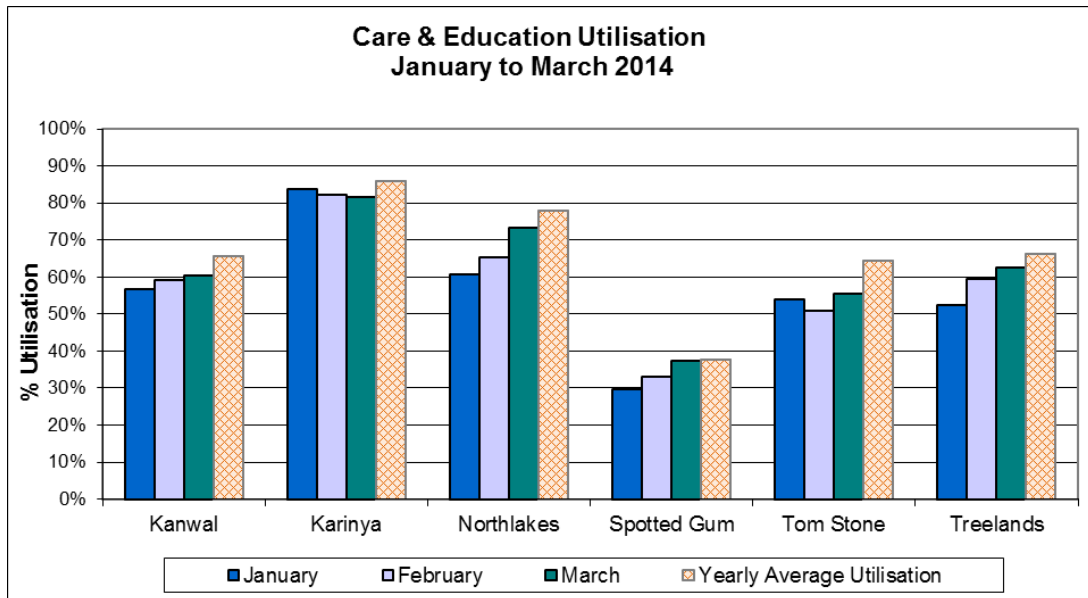
Financial Performance – Care and Education	Child Care \$'000	Vacation Care \$'000	YTD Actual \$'000	YTD Budget \$'000
Year to Date March 2014				
Operating Income (excluding capital items)	3,001	53	3,054	3,604
Operating Expenses	2,685	40	2,725	2,935
Management Overheads	238	5	244	272
Net Operating Result before Corporate Overheads	78	8	86	397
Corporate Overheads	465	10	475	485
Net Operating Result after Corporate Overheads	(388)	(2)	(390)	(88)
Tax Equivalents	155	-	155	155
Operating Result after Corporate Overheads and Tax Equivalents	(543)	(2)	(545)	(243)

Variations are attributed to child care fees which are unfavourable by \$545k due to lower utilisations, however this is intentionally managed through reduced operating expenditure related to employee costs \$162k, materials and contracts \$56k and other operating expenses \$21k.



Care and Education Centres average utilisations for the third quarter (as graphed below) were as follows:

- Kanwal 59% - 59 places
- Karinya 83% - 39 places
- Northlakes 66% - 45 places
- Spotted Gum 33% - 39 places
- Tom Stone 53% - 39 places
- Treelands 58% - 39 places



Utilisation rates are monitored closely and staffing is adjusted to ensure child staff ratios are met whilst ensuring optimal allocation of staff through our Care and Education Centres.

3.3.

Capital Expenditure

Capital expenditure to 31 March 2014 was \$45.0 million, compared to a year to date budget of \$55.1 million and represents 54% of the full year adopted budget of \$83.8 million.

Capital expenditure by fund is summarised below.

Capital Expenditure By Fund	Last Year Actual 2012-13 \$'000	YTD Actual 2013-14 \$'000	Original Budget 2013-14 \$'000	Approved Changes Q1 \$'000	Approved Changes Q2 \$'000	Proposed Changes Q3 2013-14 \$'000	Projected Full Year 2013-14 \$'000
General Fund	41,884	31,879	56,829	(2)	1,022	(650)	57,199
Water Fund	13,322	9,035	16,335	914	1,469	(1,201)	17,517
Sewer Fund	12,223	4,065	10,663	(912)	(2,491)	(944)	6,315
Total capital expenditure	67,429	44,979	83,827	-	-	(2,795)	81,031

A financial report of capital expenditure by Council Service is detailed in Attachment 4.6 of this report.

Council's capital expenditure program is constantly being reviewed to better understand and respond to delays, variation to estimates, phasing, changed priorities, weather, availability of support funding and related developments, or other factors. During Q3 a review of capital projects was undertaken and resulted in a proposed reduction of \$2.8m to the full year capital expenditure budget of \$83.8 million. The changes are as a result of savings on completed works, delays or deferrals in proceeding with other projects and unsuccessful grant bids. \$2.8 million represents a reduction of 3.3% to the capital program and will see the annual budget revised down to \$81.0 million.

While a reduction is proposed, the 2013-14 Q3 financial position compares favourably to the Q3 position in the prior year, due to increased monitoring and focus being placed on completing capital projects within the year that funds are allocated. Council has spent \$8.4 million more on capital expenditure and completed 7% more of the capital program compared to the previous year. Last year, as at 31 March 2013 (with a 2012-13 full year budget of \$78.0 million), year to date expenditure was \$36.6 million or 47% of the full year budget.

A summary of the proposed changes is provided in Attachment 4.8 Proposed Capital Expenditure Amendments.

Significant Capital Projects

The following table shows YTD expenditure on Council's significant 2013-14 capital projects, which are those projects with a budget over \$1.5 million.

Project	YTD Actual 2013-14	Original Budget 2013-14	Approved Changes Q1	Approved Changes Q2	Proposed Changes Q3 2013-14	Projected Full Year 2013-14	YTD Actual / Q2 Annual Budget 2013-14
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	%
Construction and Lining of Cell 4.3 and Associated Infrastructure Buttonderry Waste Management Facility	3,516	6,824	308	-	-	7,132	49.3%
Road Reseal Programme 2013/14	5,497	5,995	(2,100)	1,088	1,740	6,723	118.2%
Plant & Fleet Purchases	3,773	5,332	-	(450)	-	4,882	74.5%
Wyong CBD Drainage	331	1,372	300	2,110	(282)	3,500	12.3%
Warnervale Road and Culvert	2,632	2,970	-	-	280	3,250	59.9%
Central Coast Youth Skills & Employment Centre Tuggerah	1,700	-	-	2,700	-	2,700	63.0%
Berkeley Road, upgrade	146	1,250	410	-	(1,000)	660	8.8%
The Ridgeway Tumbi Umbi, upgrade	242	1,625	(962)	962	-	1,625	14.9%
Wyong Performing Arts Centre 'The Art House'	517	4,000	-	2,800	-	1,200	43.1%

Special Rate Variation (SRV) projects

In June 2013, Council was successful in gaining approval from IPART for a Special Rate Variation (SRV), providing an increase to General Rates of 6.9% per year for 4 years, commencing 2013-14. In accordance with the IPART approval, the additional rate income must be used to reduce the \$130 million infrastructure backlog.

Council allocated the funding to projects in accordance with its Asset Management Strategy and will review these allocations annually as part of Strategic Plan development.

The table below sets out the YTD expenditure by unit of the approved 2013-14 SRV projects.

Unit	YTD Actual 2013-14	Original Budget 2013-14	Approved Changes Q1	Approved Changes Q2	Proposed Changes Q3 2013-14	Projected Full Year 2013-14	YTD Actual / Q2 Annual Budget 2013-14
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	%
Roads and Drainage	2,226	8,315	(1,267)	1,267	(441)	7,874	26.8%
Open Space and Recreation	254	1,420	-	(980)	187	627	57.7%
Property Management	517	1,018	(135)	(245)	-	638	81.0%

Unit	YTD Actual 2013-14	Original Budget 2013-14	Approved Changes Q1	Approved Changes Q2	Proposed Changes Q3 2013-14	Projected Full Year 2013-14	YTD Actual / Q2 Annual Budget 2013-14
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	%
Property Development – Town Centres	403	700	-	410	(30)	1,080	36.3%
Information Management	54	278	49	50	(20)	357	14.3%
Finance	11	240	-	(50)	(86)	104	5.5%
Community Partnerships and Planning	12	26	-	-	-	26	46.0%
Customer and Community Relations	9	9	-	-	-	9	100%
Total	3,486	12,006	(1,353)	452	(390)	10,715	31.4%

When adjusting SRV project budgets the original Council SRV funding of \$10 million is maintained, the grant and contribution funding portions are subject to change depending on success of grant and contribution bids.

Summary of Proposed Q3 SRV Changes

It is proposed to reduce SRV funded projects by \$0.4 million in this Q3 review, which is predominantly in the Roads and Drainage Unit. The reasons for the proposed reduction are that grant funding being secured for The Ridgeway project and the deferral of several other projects due to the reprioritisation of the Wyong CBD drainage project. Council will maintain \$10.7 million SRV funding for infrastructure backlog works.

The Ridgeway project has received full grant funding from the Federal Government and therefore in 2013-14 does not require SRV funding. The Ridgeway project was included in the original budget for \$1.6 million, funded 50/50 between Wyong Council SRV funds and Gosford City Council, as a boundary Road. As the Federal Government has since provided the funding for this project, Council's SRV funding is proposed to be transferred from The Ridgeway project to other high priority Road Pavement upgrades.

In addition, during Q3 resources were re-allocated to work on the Wyong CBD drainage project (non SRV project) to precede development projects within the Wyong CBD including construction of the Art House, Frank Ballance Park and Aldi development. This has resulted in a number of Road Upgrade projects being deferred until 2014-15. SRV funding is proposed to be allocated to other Road Pavement upgrade projects that were identified in Council's infrastructure backlog program of works. Some of the proposed projects have been completed and the remainder are able to be completed prior to 30 June 2014.

In some cases the alternate Road projects were initially classified as Renewal projects, but during detailed investigation and design phases were identified as requiring more extensive upgrade work and therefore able to be funded by the SRV.

The only other significant change that is proposed is to increase the budget for the Norah Head Boat Ramp project by \$187k to align with project costs that were approved by Council in March 2014.

The following table shows the proposed Q3 changes to the SRV program of works.

Unit	Project Name	Q3 Proposed Change \$	Comments
Finance	Deferral of elements of Finance capital projects	(86,000)	Mostly due to factors external to Council
Information Management	Reduction in IT Capital Projects	(20,000)	Small reduction in Microwave Hardware Replacement project
Open Space and Recreation	Toukley Pool - Upgrade filtration system in pool plant room	10,000	Offset by reduction in non SRV project for Toukley Pool (Grandstand)
Open Space and Recreation	Norah Head Bald Street Boat Ramp Replacement: Replacement of Boat Ramp	177,237	In accordance with Council resolution of 12 March 2014
Property Development	Budgewoi Village Link Access Ramps	(30,000)	Unable to be completed in 2013/14
Roads and Drainage	Saltwater Creek: Timber Footbridge replacement programme	(75,000)	Project deferred to 2014/15
Roads and Drainage	The Ridgeway (Ch1100 Ch1870): Road Upgrade and Renewal	(1,625,000)	Project now entirely grant funded - no SRV funding required
Roads and Drainage	Berkeley Road: Road Upgrade including stormwater drainage	(1,000,000)	Due to resources allocated to Wyong CBD drainage project this project deferred to 2014/15
Roads and Drainage	Bay Road: Road Upgrade including stormwater drainage	(200,000)	Due to resources allocated to Wyong CBD drainage project this project deferred to 2014/15
Roads and Drainage	Goorama Ave: Road Upgrade/Renewal including stormwater drainage	(400,000)	Due to resources allocated to Wyong CBD drainage project this project deferred to 2014/15
Roads and Drainage	Elouera Ave: Road Upgrade with possible stormwater drainage	(150,000)	Due to resources allocated to Wyong CBD drainage project this project deferred to 2014/15
Roads and Drainage	Panorama Ave/ Hobson: Road Upgrade/Renewal with possible stormwater drainage	(700,000)	Due to resources allocated to Wyong CBD drainage project this project deferred to 2014/15
Roads and Drainage	Anita Avenue @ Agatha: Road Upgrade including stormwater drainage	20,000	Small additional amount required to complete
Roads and Drainage	Moala Parade Charmhaven Pavement Upgrade	519,000	Alternate SRV project completed
Roads and Drainage	Mandalong Road Dooralong Upgrade	188,750	Alternate SRV project completed
Roads and Drainage	Gascoigne Avenue Gorokan Pavement Upgrade	450,000	Alternate SRV project on track to be completed by 30 June 2014
Roads and Drainage	Cornish Avenue Killarney Vale Pavement Upgrade	413,000	Alternate SRV project on track to be completed by 30 June 2014
Roads and Drainage	Anne Findlay Place Bateau Bay Pavement Upgrade	162,000	Alternate SRV project completed
Roads and Drainage	Wahroonga Road Kanwal Pavement Upgrade	200,000	Alternate SRV project completed
Roads and Drainage	McPherson Road Mardi Pavement Upgrade	239,500	Alternate SRV project completed
Roads and Drainage	Woolworths Way Warnervale Pavement Upgrade	195,000	Alternate SRV project completed

Unit	Project Name	Q3 Proposed Change \$	Comments
Roads and Drainage	Sherry Street Tumbi Umbi Pavement Upgrade	159,500	Alternate SRV project completed
Roads and Drainage	Cuthbert Road Killarney Vale Pavement Upgrade	119,000	Alternate SRV project completed
Roads and Drainage	Heador Street Toukley Pavement Upgrade	131,250	Alternate SRV project completed
Roads and Drainage	Malana Avenue Bateau Bay Pavement Upgrade	112,500	Alternate SRV project completed
Roads and Drainage	Woolana Ave Halekulani Pavement Upgrade	278,500	Alternate SRV project on track to be completed by 30 June 2014
Roads and Drainage	Greenacre Ave Lake Munmorah Pavement Upgrade	350,000	Alternate SRV project on track to be completed by 30 June 2014
Roads and Drainage	Thompson Road Upgrade	170,000	Alternate SRV project on track to be completed by 30 June 2014
Total		(390,763)	

The following table provides a summary of SRV project funding sources at the beginning of 2013-14 and then at each subsequent quarterly review.

SRV Project Budgets	SRV Funding 2013-14 \$'000	Grant Funding 2013-14 \$'000	Contribution Funding 2013-14 \$'000	Total Budget 2013-14 \$'000
Original Budget	10,349	845	812	12,006
Q1 Annual Budget	9,911	743	-	10,654
Q2 Annual Budget	10,016	-	1,092	11,108
Proposed Q3 Annual Budget	10,435	-	280	10,715

While it is proposed to reduce SRV projects by \$0.4 million in Q3, Council's allocation to SRV remains above \$10 million.

3.4.

Cash and Investments

Cash Flow

Cash flows during the quarter were managed through maturities and investments in new term deposits, with a net outflow of cash and term deposits of \$1.7 million for the quarter.

Closing cash and investments were \$155.8 million, consisting of transactional accounts at \$0.6 million (net of un-presented cheques but excluding un-receipted deposits), cash at call of \$7.3 million and investment securities of \$147.9 million.

Cash and Investments

Council's investments are made in accordance with the Local Government Act (1993), the Local Government (General) Regulation (2005), Council's Investment Policy, the Ministerial Investment Order issued February 2011 and Division of Local Government Investment Policy Guidelines published in May 2010.

Council's investments (comprised of deposit accounts and term deposits) continue to be conservatively managed to ensure that value is added to the fixed interest portfolio. The value of investment securities and call deposit accounts *excluding* transactional accounts, at 31 March 2014 was \$155.2 million. Returns year to date were 4.31%, which is above the BBSW benchmark of 2.73%, with Council investments mainly in term deposits.

Total net return for the quarter ending March 2014 was \$1.6 million consisting of interest earnings only, was \$0.3 million favourable when compared to the revised budget for the quarter of \$1.3 million. Cumulative return for the year is \$0.4 million unfavourable when compared to the year to date revised budget.

Although a conservative approach is taken when reinvesting term deposits, yields have declined due to the drop in cash rate to 2.50% in August 2013 and the introduction of BASEL III measures. Council has reacted by investing in smaller credit worthy institutions such as Credit Union Australia, Members Equity Bank and Rural Bank, allowed within the investment guidelines, to improve its investment yield.

Council's cash and investment holdings at the end of Q3 are shown in the following table:

Cash and Investment Balances as at 31 March 2014	\$'000
Petty cash	15
Cash held by S355 Committees	545
Cash at bank less un-presented cheques	56
Total Cash on Hand	616
Cash at call – Cash Management	7,294
Investments in term deposits and bonds	147,913
Total Investment Portfolio	155,207
Closing Cash and Investments	155,823

Breakdown by investment class as at 31 March 2014:

Investment Class	Balance 31 March \$'000	Return YTD \$'000	Return YTD %
Cash at Call	7,294	315	3.13%
Term Deposits	147,913	4,606	4.35%
Managed Funds	-	124	13.55%
Closing Investment Portfolio	155,207	5,045	4.31%
Benchmark BBSW			2.73%

Loans

Borrowings decreased in Q3 due to loan principal repayments. New subsidised borrowings of \$2.45 million were drawn down in December as part of the Local Infrastructure Renewal Scheme Round 2.

As at 31 March 2014, Council's Weighted Average Cost of Debt is 7.02% with a Weighted Average Maturity of 9.51 years, an improvement on the Q2 position. This includes externally held debt only, not inter fund borrowings.

Borrowings	Budget 2013-14 \$'000	YTD Actual \$'000	Projected 2013-14 \$'000
Current	10,755	10,755	10,755
Non-Current	181,132	181,132	181,132
Borrowing	-	2,450	3,000
Redemption	(10,755)	(7,346)	(10,755)
Closing Borrowings	181,132	186,991	184,132

3.5. Key Performance Indicators

Indicator	Measure	Actual 2012-13	Target 2013-14	Trend 2013-14
Unrestricted Current Ratio	<u>Current assets less external restrictions</u> Current liabilities less specific purpose liabilities	1.87	> 1.50	✓
Debt Service Ratio	<u>Net debt service cost</u> Operating revenue	12.19	< 0.15	✓
Rate Coverage Ratio	<u>Rates and annual charges</u> Total revenue	0.55	> 0.50	✓

3.6.

Contracts and Other Expenses

Major Contracts

The following major contracts were entered into by Council during Q3:

Contract	Contractor	Contract Detail and Purpose	Contract Value	Commencement Date	Duration of Contract	Budgeted Yes/No
CPA/225657	Gongues Constructions Pty Ltd	Inlet Screen Gwandalan Sewage Treatment Plant	\$216,000	1 January 2014	7 months	Yes
CPA/232299	Select Solutions Group Pty Ltd	Domestic Water Meter Replacement Program	\$249,853	3 February 2014	5 months	Yes
CPA/234913	SMEC Australia Pty Ltd	Remediation of Former Gwandalan Landfill	\$333,367	1 January 2014	1 month	Yes
CPA/236706	Better Concrete Products Pty Ltd	Supply of Precast Concrete Culvert Units for the Wyong Town Trunk Drainage Project	\$1,013,094	4 February 2014	17 months	Yes
CPA/235490	Meinhardt Infrastructure and Environments	Detailed design documentation - Remediation Former Tumbi Landfill	\$218,000	18 February 2014	4 months	Yes
CPA/235478	Collective Civil Pty Ltd	Construct Gross Pollutant Trap Saltwater Creek at Long Jetty Lions Park	\$228,276	17 February 2014	4 months	Yes
CPA/236170	Bettal Pty Ltd	The Entrance Town Centre Tile Replacement Project	\$559,731	22 April 2014	3 months	Yes
CPA/236290	Fleet Logistics(EZY2C) Pty Ltd	In- Vehicle GPS-Hardware and Monitoring Services	\$312,816	4 March 2014	3 years	Yes
CPA/234219	SFS Projects Australia Pty Ltd	Buttonderry Waste Management Facility Administration Building - Construction	\$802,009	17 March 2014	18 months	Yes
CPA/236748	Tenite Pty Ltd	Toukley Town Centre North- South Pedestrian Link Construction	\$343,826	5 March 2014	4 months	Yes
CPA/237919	Bolte Civil Pty Ltd	Norah Head Boat Ramp	\$2,211,872	17 March 2014	9 months	Yes
CPA/224705	Waste Processing Solutions Pty Ltd	Dewatering of Sludge Lagoons at four Treatment Plants	\$1,275,000	27 March 2014	3 years	Yes

3.7.

Material risks and liabilities

Risk

- Construction projects (capital works) have inherent risks relating to latent conditions, scope definition, and allowable contract variations. In the works program there are a number of projects which by their size and scope have the potential for final costs to vary from original estimates.
- Final estimate of the remediation cost of Council's closed landfills is subject to final studies and design, and construction estimates.
- Condition of Council's infrastructure and assets continues to have inherent future liabilities for renewal, upgrade and maintenance. In June 2013, the Independent Pricing and Regulatory Tribunal (IPART) approved a 6.9% increase to Ordinary Rates for a period of four years commencing in 2013-14. All revenue raised (above the rate peg set at 3.4% for the 2013-14 financial year) will be spent on capital works to assist with reducing the current infrastructure backlog.

Liabilities

Significant provisions exist for:

- Future remediation of closed landfills, which is a large future cost for Council and requires funding currently estimated to be \$52.9 million (including Buttonderry Waste Management Facility).
- Section 94 Contributions - Council's current unfunded liabilities fall into two areas, Section 94 monies owed to developers for works undertaken by them and the gap between future capital works and Council's ability to collect funds to cover the cost of those works.
 - In respect to credits owed to developers, the current liability is \$15.0 million being \$13.9 million for s94 developer contributions and the balance of \$1.1 million for s64 water and sewer contributions. In respect to capital works, all future identified works are covered by the monies to be collected under the relevant Section 94 Contributions Plan other than for Warnervale that has a gap of \$37.8 million. Council's financial statements show that future Section 94 expenditure equals expected future income with the exception of the Warnervale plan \$37.8 million gap that will need to be funded by Council.
 - In addition, Council has a liability to the RMS for the upgrade of Craigie Avenue and the Pacific Highway to the value of \$0.75 million. This liability is being paid off on an annual basis.
 - A new Section 94 Financial Model is being developed that will include scenario analysis, both of contributions to be received and infrastructure works to be provided. The Model will enhance Council's current capability in this area.

3.8. Legal Matters

During Q3 Wyong Shire Council was party to the following proceedings:

- Wyong Shire Council & Strathavon Resort Pty Ltd. In March 2014 there were four pending proceedings before the Land and Environment Court:
 - A Class 1 appeal against the deemed refusal of an Application for a Building Certificate in respect to certain building works at the premises at 31 Boyce Avenue, Wyong;
 - A Class 1 appeal against Council's refusal of a development application seeking to establish a boarding house in part of those premises;
 - A Class 1 appeal against Council's refusal of a development application seeking to use caravans and a mobile home erected on those premises;
 - Class 4 proceedings commenced by Council seeking declaratory and injunctive orders in respect to certain structures on the premises.

The deemed refusal proceedings were discontinued by Strathavon Resort Pty Ltd, with an order for costs made in Council's favour. The remaining Class 1 proceedings were listed for a s. 34 conciliation conference on 10 April 2014, with the Class 4 proceedings referred to mediation on that same date.

- Wyong Shire Council & Jenbuild Pty Ltd. These arbitration proceedings concern disputes arising from four construction contracts. Proceedings resolved on confidential terms.
- Wyong Shire Council, Central Coast Aero Club, Australia Skydive Pty Ltd & the Reserve Trust for the Pioneer Dairy.

Council was party to the following proceedings before the Land and Environment Court of NSW:

- Proceedings originally commenced by Australia Skydive Pty Ltd against Council and Central Coast Aero Club in the Supreme Court of NSW. Those proceedings were transferred to the Land and Environment Court in December 2013.
- Class 4 proceedings in the Land and Environment Court commenced by Council against Australia Skydive Pty Ltd and the Reserve Trust.
- Class 1 appeal proceedings against condition imposed by Council in consent granted to Australia Skydive's development application for the use of part of the Pioneer Dairy site for a number of purposes including the landing of parachutists.

The three proceedings have been before the Court on numerous occasions since late November 2013, and are complex. It is expected the proceedings will be heard in the middle of 2014.

3.9. Consultancy and Legal Expenses

The following tables show expenditure year to date for consultants and external legal fees.

A consultant is a person or organisation engaged under contract on a temporary basis to provide recommendations or high level specialist or professional advice to assist decision making by management. Generally it is the advisory nature of the work that differentiates a consultant from other contractors.

Consultants	YTD Actual \$'000	Budgeted Yes/No
Expense by Department		
Community and Recreation Services	216	Yes
Development and Building	56	Yes
General Manager	161	Yes
Infrastructure and Operations	392	Yes
Property and Economic Development	284	Yes
Total	1,109	

Legal Fees	YTD Actual \$'000	Budgeted Yes/No
Expense by Department		
Community and Recreation Services	2	Yes
Development and Building	7	Yes
General Manager	56	Yes
Infrastructure and Operations	3	Yes
Property and Economic Development	36	Yes
Total	104	

3.10. Sponsorship and Funding arrangements

Town Centre Management

The \$1.8 million funding Council makes to maintain the community's town centre assets provide a high level of community service, provision of local events and increased amenity to encourage tourism. Just over half of the funding for the entities comes from a special rate raised against non-residential properties within the Town Centre areas with Council funding the remaining balance.

Council provides funds to each town centre management entity in return for deliverables including event management, marketing and promotion the local area, asset maintenance and promoting economic development within the area.

The Entrance Town Centre

Visitation with walk in visitors was increased by 42% and total sales up 55% on previous year. Fishing licence sales were up 160% while our souvenir sales up 2% and Pelican feed visitation was down by 22% on last year figures.

Delivered following events:

- Australia Day
- Central Coast Country Music Festival
- Summer City Rumble Event
- 5 Farmers Markets
- Met all deliverables for maintenance.

Greater Toukley Vision (GTV)

Prepared first GTV newsletter.

Delivered following events:

- Sunday on the Village Green program well received. Extended program to local car & hot-rod club for second Saturday of each month attracting approximately 80 people
- Easy St Show & Shine day
- Australia Day
- Met all deliverables for maintenance.

Wyong Chamber of Commerce

Undertook Graffiti Removal at Wyong Town Centre.

Delivered following events:

- Australia Day Celebrations | Co-hosted with Wyong Race Club & Wyong Shire Council
- Wyong Employer Engagement and Labour Market Update Presentation | Co-hosted with the Local Advisory Group & Wyong Shire Council
- Chamber Luncheon | Zenith Business Centre Tuggerah

Sponsorship

Council provides sponsorships to the business and community sectors of our Shire. Sponsorships are a commercial arrangement, in which Council provides a contribution of money or in kind support, to a group, activity or event.

Business Enterprise Centre (BEC)

BEC / Central Coast Skills Centre Collaboration will see the BEC relocate to the new skills centre in 2014.

There were 48 attendees over four small business workshops, 29 new members joined and 544.25 support hours provided.

Surf Life Saving Surf Clubs and Surf Life Saving Central Coast

Commenced preparation and negotiation of Sponsorship Agreements.

Tourism

Central Coast Tourism supports tourism by developing partnerships within the industry, seeking sponsorship and investment and sourcing major events for the region.

Central Coast Tourism

Secured two new day tours with Travel Centre and Lion Tours estimated value \$98k and attracting approx. 3000 visitors from Korea and Taiwan.

Secured Regional Visitor Economy Funding -Quarantine Pool (matched funding) of \$260,215 for four programs.

Activities delivered in quarter:

- Digital Awareness Campaign - Central Coast Daily Telegraph Mini-book lift out feature which was incorporated into the *Best Weekends* section in mid-March 2014. WSC participants included: Central Coast Holiday Parks, Mercure Kooindah Waters, Norah Head Lighthouse tours and accommodation, Treetops Adventure Park, Kim's Beachside Lodges, and Pro Dive Central Coast
- Commenced development of MICE and Wedding Campaign - designed to attract conferences, business events, key sporting events and weddings
- Held CCT Network meeting at Shelly Beach Golf Club with 80 participants
- CCT membership 282 members with 117 in Wyong Shire
- Met all deliverables.

Details of sponsorship funding, contributions and donations made by Council during January to March 2014 (Q3) are as follows:

Sponsorship Funding, Contributions and Donations	Q3 Actual \$'000	YTD Actual \$'000
Tipping Fee Community Groups	41	114
Central Coast Tourism Inc	38	113
Community Matching Grants	75	75
Councillor Community Improvement Grants	17	54
Surf Clubs	54	54
Community Benefit Grants	7	30
Rent For Community Groups	10	30
Central Coast Business Enterprise Centre	-	17
Volunteer Rescue Association	5	15
Central Coast Lifesaving	14	14
Sport And Cultural Sponsorship Program	-	9
Convict Trail	-	5
Casar Park Supporters Inc.	5	5
Greater Toukley Vision Inc.	-	5
Mingara Leisure Centre	-	5
Community Subsidy Scheme	-	2
Hunter Tourism Awards	-	1
Total	266	548

Grants Received

The following grants were received during January to March 2014 (Q3):

Detail	Q3 Actual \$'000	YTD Actual \$'000
Financial Assistance Grant - Equalisation Component	1,366	4,099
Pension Subsidy - General	-	1,245
Financial Assistance Grant – Local Road Component	252	757
Pension Subsidy – Domestic Waste	-	747
Pension Subsidy - Water	-	703
NSW Rural Fire Service	125	689
Pension Subsidy - Sewer	-	672
Tuggerawong Rd (Roads to Recovery)	379	379
Library Per Capita Subsidy	356	356
Woolana Ave (Roads to Recovery)	278	278
Childcare Vacation Care & Special Needs Subsidy	86	255
Toowoomb Bay Rd (Roads to Recovery)	132	181
Low Interest Subsidy LIRS (Local Infrastructure Renewal Scheme)	-	138
Ruttley's Rd Upgrade RMS	50	100
Natural Disaster Funding Feb 2013 (Storm Event)	37	67
Kanangra Dr (Roads to Recovery)	54	54
Employment & Training	4	52
Sustainability (Solar Hot Water)	51	51
Noxious Plants	48	48
Youth Opportunities Grant (Youth Stuff Project)	23	46
Tennis Court Refurbishment Program	20	45
RMS Grants (Road Safety)	18	45
Floodplain Management Studies	43	43
Speech Therapist	14	43
Arts Facility Development Position	33	33
Strengthening Communities	15	32
Library Local Priority Grant	30	30
Shared Pathways RMS	3	28
HACC Service Worker	8	25
Waste & Litter Grants	20	20
Immunisation Subsidy	-	14
Blackspot Program Ocean & Ourringa St Youth Week	3	3
Youth Week Grandparents Day Event	1	3
Grandparents Day Event Seniors Week	-	2
Seniors Week	1	1
Total	3,450	11,284

4. Attachments

4.1. Income Statement by Fund

WYONG SHIRE COUNCIL	YTD % Elapsed: 75%															
	CONSOLIDATED				GENERAL FUND				WATER FUND				SEWER FUND			
	Last Year Actual	YTD Actual	YTD Adopted Budget	Full Year Adopted Budget	Last Year Actual	YTD Actual	YTD Adopted Budget	Full Year Adopted Budget	Last Year Actual	YTD Actual	YTD Adopted Budget	Full Year Adopted Budget	Last Year Actual	YTD Actual	YTD Adopted Budget	Full Year Adopted Budget
Income Statement	2012-13	2013-14	2013-14	2013-14	2012-13	2013-14	2013-14	2013-14	2012-13	2013-14	2013-14	2013-14	2012-13	2013-14	2013-14	2013-14
March 2014	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
INCOME from continuing operations:																
Rates & Annual Charges	135,675	142,079	142,090	142,282	92,008	97,972	98,080	98,165	16,042	16,459	16,497	16,497	27,626	27,648	27,512	27,619
User Charges & Fees	57,502	41,777	45,750	61,626	30,652	20,782	23,316	31,608	25,449	20,399	21,115	28,256	1,401	596	1,319	1,762
Interest and Investment Revenue	9,271	7,049	7,485	9,947	5,879	4,574	4,735	6,262	1,149	1,094	1,021	1,367	2,244	1,381	1,729	2,318
Other	4,083	3,780	3,234	4,784	3,745	3,328	2,928	4,375	208	220	232	309	130	231	75	100
Grants & Contributions Operating	25,953	11,855	11,538	15,099	24,356	10,366	10,050	13,351	931	817	775	1,035	666	672	712	712
Grants & Contributions Capital	15,115	7,084	4,513	11,213	10,480	4,565	2,501	7,367	3,122	1,525	1,112	2,733	1,514	994	900	1,113
Gain from the Disposal of Assets	828	132	115	423	827	132	115	423	1	(0)	(0)	(0)				
Total income from continuing operations	248,427	213,756	214,725	245,374	167,946	141,719	141,724	161,551	46,901	40,515	40,752	50,197	33,580	31,522	32,248	33,625
EXPENSES from continuing operations:																
Employee Costs	75,223	56,321	58,125	79,145	61,280	45,935	47,842	65,775	6,774	4,952	4,914	8,945	7,170	5,434	5,369	4,425
Borrowing Costs	16,741	11,499	11,642	17,859	2,951	325	463	3,207	11,894	9,901	10,335	13,526	1,897	1,272	844	1,126
Materials and Contracts	48,418	29,330	34,620	49,527	25,010	12,025	14,753	24,005	12,644	9,029	12,715	16,574	10,764	8,277	7,152	8,949
Depreciation	52,678	41,052	40,966	54,957	23,561	19,092	18,869	25,341	16,632	12,323	12,332	16,486	12,484	9,637	9,765	13,130
Other	30,264	24,904	27,304	34,430	24,833	20,799	23,331	29,570	2,900	2,055	2,069	2,329	2,531	2,050	1,904	2,531
Loss from the Disposal of Assets	2,683	660	442	586	679	660	442	586	1,433	0	0	0	571	0	0	0
Total expenses from continuing operations	226,006	163,766	173,100	236,505	138,313	98,836	105,700	148,485	52,277	38,260	42,365	57,860	35,416	26,671	25,035	30,160
Total Profit & (Loss) from Operations	22,421	49,990	41,625	8,869	29,633	42,883	36,024	13,067	(5,376)	2,255	(1,613)	(7,663)	(1,836)	4,851	7,213	3,466
Total Profit & (Loss) before Capital Grants and Contributions	7,305	42,906	37,112	(2,344)	19,153	38,318	33,524	5,700	(8,498)	730	(2,725)	(10,396)	(3,350)	3,857	6,313	2,352
Less Tax Equivalent Payments (Notional)	1,172	982	1,033	1,378	537	568	568	758	380	246	276	368	255	168	189	252
Total Profit & (Loss) after Tax Equivalent Payments	6,133	41,924	36,079	(3,722)	18,616	37,750	32,955	4,942	(8,878)	484	(3,001)	(10,764)	(3,605)	3,689	6,124	2,100

4.2. Income and Expense Budget Review Statement

Budget Review Statement	CONSOLIDATED					GENERAL FUND					WATER FUND					SEWER FUND				
	Original Budget	Approved Changes Q1 & Q2	Proposed Changes for Council Resolution	Projected Year End Result	Actual YTD	Original Budget	Approved Changes Q1 & Q2	Proposed Changes for Council Resolution	Projected Year End Result	Actual YTD	Original Budget	Approved Changes Q1 & Q2	Proposed Changes for Council Resolution	Projected Year End Result	Actual YTD	Original Budget	Approved Changes Q1 & Q2	Proposed Changes for Council Resolution	Projected Year End Result	Actual YTD
	2013-14 \$'000	2013-14 \$'000	2013-14 \$'000	2013-14 \$'000	2013-14 \$'000	2013-14 \$'000	2013-14 \$'000	2013-14 \$'000	2013-14 \$'000	2013-14 \$'000	2013-14 \$'000	2013-14 \$'000	2013-14 \$'000	2013-14 \$'000	2013-14 \$'000	2013-14 \$'000	2013-14 \$'000	2013-14 \$'000	2013-14 \$'000	2013-14 \$'000
INCOME from continuing operations:																				
Rates & Annual Charges	142,171	111	-	142,282	142,079	98,236	(71)	-	98,165	97,972	16,377	120	-	16,497	16,459	27,558	61	-	27,619	27,648
User Charges & Fees	60,570	1,057	(3,251)	58,375	41,777	30,555	1,052	(3,180)	28,427	20,782	28,251	6	-	28,256	20,399	1,763	(1)	(71)	1,691	596
Interest and Investment Revenue	8,677	1,270	-	9,947	7,049	4,917	1,345	-	6,262	4,574	1,405	(38)	-	1,367	1,094	2,355	(37)	-	2,318	1,381
Other	4,124	660	(7)	4,778	3,780	3,715	660	(7)	4,369	3,328	309	(0)	-	309	220	100	0	-	100	231
Grants & Contributions Operating	14,431	667	(14)	15,085	11,855	12,490	862	37	13,388	10,366	1,229	(194)	(51)	984	817	712	(0)	-	712	672
Grants & Contributions Capital	14,644	(3,430)	(143)	11,071	7,084	10,594	(3,227)	(729)	6,637	4,565	2,936	(203)	-	2,733	1,525	1,113	(0)	587	1,700	994
Gain from the Disposal of Assets	803	(380)	(200)	223	132	803	(380)	(200)	223	132	-	-	-	-	(0)	-	-	-	-	-
Total income from continuing operations	245,419	(45)	(3,615)	241,759	213,756	161,310	241	(4,079)	157,472	141,719	50,507	(310)	(51)	50,146	40,515	33,602	23	516	34,141	31,522
EXPENSES from continuing operations:																				
Employee Costs	79,473	(328)	(311)	78,834	56,321	66,084	(309)	(305)	65,470	45,935	8,954	(9)	(2,568)	6,378	4,952	4,435	(10)	2,562	6,986	5,434
Borrowing Costs	16,071	1,787	(991)	16,868	11,499	3,207	(0)	(1,126)	2,082	325	11,738	1,787	(419)	13,106	9,901	1,126	(0)	554	1,679	1,272
Materials and Contracts	46,325	3,200	(3,452)	46,073	29,330	23,394	610	(2,812)	21,192	12,025	13,322	3,250	(734)	15,838	9,029	9,609	(660)	94	9,042	8,277
Depreciation	55,078	(120)	(2)	54,955	41,052	26,030	(689)	248	25,589	19,092	16,543	(57)	13	16,499	12,323	12,505	625	(263)	12,867	9,637
Other	35,859	(1,429)	(2,212)	32,218	24,904	31,496	(1,926)	(2,212)	27,358	20,799	2,264	65	0	2,329	2,055	2,099	432	0	2,531	2,050
Loss from the Disposal of Assets	313	273	0	586	660	313	273	0	586	660	-	0	0	-	-	-	-	-	-	-
Total expenses from continuing operations	233,120	3,383	(6,969)	229,534	163,766	150,525	(2,041)	(6,207)	142,278	98,836	52,821	5,037	(3,707)	54,151	38,260	29,773	387	2,946	33,106	26,671
Total Profit & (Loss) from Operations	12,300	(3,428)	3,354	12,225	49,990	10,785	2,282	2,128	15,195	42,883	(2,314)	(5,347)	3,657	(4,004)	2,255	3,829	(364)	(2,430)	1,035	4,851
Total Profit & (Loss) before Capital Grants and Contributions	(2,344)	0	3,497	1,153	42,906	191	5,509	2,857	8,556	38,318	(5,251)	(5,144)	3,657	(6,738)	730	2,716	(364)	(3,017)	(665)	3,857

YTD Elapsed: 75%

4.3.

Statement of Financial Position by Fund

WYONG SHIRE COUNCIL Statement of Financial Position March 2014	CONSOLIDATED				GENERAL FUND			WATER FUND			SEWER FUND		
	Last Year Actual 2012-13 \$'000	YTD Actual 2013-14 \$'000	Movement \$'000	Full Year Original Budget \$'000	Last Year Actual 2012-13 \$'000	YTD Actual 2013-14 \$'000	Movement \$'000	Last Year Actual 2012-13 \$'000	YTD Actual 2013-14 \$'000	Movement \$'000	Last Year Actual 2012-13 \$'000	YTD Actual 2013-14 \$'000	Movement \$'000
	YTD % Elapsed: 75%												
CURRENT ASSETS													
Cash & cash equivalents	63,667	37,911	(25,756)	70,282	36,913	37,911	998	12,360	(0)	(12,360)	14,394	0	(14,394)
Investments	81,000	72,913	(8,087)	30,793	46,936	18,826	(28,110)	15,774	18,083	2,309	18,290	36,004	17,714
Receivables	31,154	58,109	26,955	34,802	12,131	30,269	18,138	15,230	19,640	4,410	3,792	8,199	4,407
Inventories	1,940	1,422	(518)	3,156	1,450	932	(518)	490	490	-	-	-	-
Other	537	170	(367)	893	537	170	(367)	0	0	-	-	-	-
TOTAL CURRENT ASSETS	178,298	170,524	(7,773)	139,926	97,967	88,108	(9,859)	43,854	38,213	(5,641)	36,476	44,203	7,727
NON-CURRENT ASSETS													
Investments	16,573	45,000	28,427	13,474	9,532	37,959	28,427	3,253	3,253	-	3,788	3,788	-
Receivables	20,928	20,582	(346)	659	20,464	20,136	(328)	451	447	(4)	13	-	(13)
Intangible Assets	711	357	(354)	-	515	259	(256)	122	61	(61)	74	36	(38)
Infrastructure, Property, Plant & Equipment	2,523,498	2,527,932	4,435	2,352,807	995,177	1,008,050	12,874	836,102	833,188	(2,914)	692,219	686,694	(5,525)
Investments under equity method	250	250	-	125	250	250	-	-	-	-	-	-	-
TOTAL NON-CURRENT ASSETS	2,561,960	2,594,122	32,162	2,367,065	1,025,937	1,066,654	40,717	839,928	836,949	(2,978)	696,095	690,518	(5,576)
TOTAL ASSETS	2,740,257	2,764,646	24,389	2,506,991	1,123,905	1,154,762	30,857	883,782	875,162	(8,620)	732,570	734,722	2,151
CURRENT LIABILITIES													
Payables	36,924	15,347	(21,577)	66,921	28,748	13,421	(15,327)	5,518	1,254	(4,264)	2,658	671	(1,986)
Borrowings	11,132	11,363	231	11,133	819	798	(21)	9,359	9,583	223	954	982	29
Provisions	27,556	27,248	(308)	34,705	22,906	22,598	(308)	2,261	2,261	-	2,389	2,389	-
TOTAL CURRENT LIABILITIES	75,612	53,958	(21,654)	112,759	52,473	36,818	(15,656)	17,138	13,097	(4,041)	6,001	4,043	(1,958)
NON-CURRENT LIABILITIES													
Payables	14,210	14,210	-	27	9,397	9,397	-	3,932	3,932	-	881	881	-
Borrowings	200,755	195,347	(5,407)	170,446	4,551	6,730	2,179	172,178	165,335	(6,844)	24,026	23,282	(743)
Provisions	54,053	54,053	-	52,453	53,681	53,681	-	197	197	-	176	176	-
TOTAL NON CURRENT LIABILITIES	269,018	263,610	(5,407)	222,926	67,628	69,807	2,179	176,308	169,464	(6,844)	25,082	24,339	(743)
TOTAL LIABILITIES	344,630	317,568	(27,062)	335,685	120,101	106,625	(13,476)	193,446	182,562	(10,884)	31,083	28,382	(2,701)
NET ASSETS	2,395,628	2,447,078	51,451	2,171,306	1,003,804	1,048,137	44,334	690,336	692,601	2,264	701,488	706,340	4,852

4.4. Statement of Cash Flows

WYONG SHIRE COUNCIL Cash Flow Statement March 2014	YTD % Elapsed: 75%		
	Last Year Actual 2012-13 \$'000	YTD Actual 2013-14 \$'000	Full Year Budget 2013-14 \$'000
OPERATING ACTIVITIES			
Receipts			
Receipts from customers	175,328	157,247	202,047
Interest Revenue	9,271	7,049	9,028
Grants & Contributions	41,068	18,939	29,010
Other Revenue	4,153	4,147	3,953
Payments			
Employee costs	(75,223)	(56,321)	(79,056)
Materials & Contracts	(59,012)	(36,915)	(50,719)
Borrowing costs	(16,741)	(11,499)	(13,566)
Other Expenses	(16,445)	(38,686)	(39,465)
Net cash from Operating Activities	62,399	43,960	61,232
INVESTING ACTIVITIES			
Proceeds from sale of IPP&E	(1,855)	(528)	1,937
Net movement in Investments	(33,743)	(20,340)	16,006
Net Purchase of IPP&E	(68,589)	(43,672)	(83,827)
Net cash from Investing Activities	(104,186)	(64,540)	(65,884)
FINANCING ACTIVITIES			
Net movement in Borrowings	14,312	(5,176)	(11,691)
Net cash from Investing Activities	14,312	(5,176)	(11,691)
Net increase/(decrease) in cash held	(27,475)	(25,756)	(16,343)
Cash & Cash Equivalents at beginning of period	91,142	63,667	86,625
Cash & Cash Equivalents at end of period	63,667	37,911	70,282
Investments at end of period	97,573	117,913	44,266
Cash & Investments at end of period	161,240	155,824	114,548

4.5. Business Activities

WYONG SHIRE COUNCIL	WASTE MANAGEMENT				HOLIDAY PARKS				CARE AND EDUCATION			
	Last Year Actual	YTD Actual	YTD Adopted Budget	Full Year Adopted Budget	Last Year Actual	YTD Actual	YTD Adopted Budget	Full Year Adopted Budget	Last Year Actual	YTD Actual	YTD Adopted Budget	Full Year Adopted Budget
	2012-13	2013-14	2013-14	2013-14	2012-13	2013-14	2013-14	2013-14	2012-13	2013-14	2013-14	2013-14
	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000	\$'000
Income Statement - Business Activities												
March 2014												
Income from Continuing Operations												
Rates & Annual Charges	29,064	30,723	30,716	30,716	-	-	-	-	-	-	-	-
User Charges & Fees	9,773	5,431	8,075	10,923	8,921	7,142	6,761	8,718	3,976	2,720	3,265	4,353
Interest and Investment Revenue	161	102	100	133	-	-	-	-	-	-	-	-
Other Revenues	341	437	231	307	-	-	-	-	6	2	1	1
Grants & Contributions Operating	1,751	767	761	761	3	-	-	-	457	331	339	451
Grants & Contributions Capital	-	-	-	-	-	-	-	-	-	-	-	-
Gain from the Disposal of Assets	-	-	-	-	-	-	-	-	-	-	-	-
Total Income from Continuing Operations	41,090	37,460	39,882	42,839	8,923	7,142	6,761	8,718	4,440	3,054	3,604	4,806
Expenses from Continuing Operations												
Employee Costs	1,808	1,389	1,304	1,767	217	148	134	186	3,486	2,410	2,572	3,567
Borrowing Costs	2,590	-	-	2,590	66	35	36	48	-	-	-	-
Materials & Contracts *	11,647	8,263	9,471	12,976	2,680	1,837	1,993	2,687	618	435	491	641
Depreciation	1,360	616	618	814	1,154	526	525	700	131	79	79	106
Other Operating Expenses	6,602	6,659	7,960	10,836	3,218	2,451	2,113	2,718	80	44	65	82
Loss from the Disposal of Assets	-	-	-	-	3	-	-	-	1	-	-	-
Total Expenses from Continuing Operations	24,008	16,927	19,354	28,983	7,338	4,997	4,802	6,338	4,316	2,968	3,207	4,397
Total Profit & (Loss) from Operations	17,081	20,533	20,528	13,856	1,586	2,145	1,959	2,379	123	86	397	409
Corporate Overheads	4,021	2,996	4,582	6,109	1,004	626	723	964	590	475	485	647
Tax Equivalent Payments	104	82	82	109	228	331	331	442	205	155	155	207
Total Profit & (Loss) after Corporate Overheads and Taxation Equivalent Payments	12,957	17,455	15,864	7,638	355	1,188	905	974	(672)	(545)	(243)	(445)
* Excludes Corporate Overheads												

YTD % Elapsed: 75%

4.6. Capital Expenditure Report

Capital Expenditure	Original Budget	Approved Changes Q1 Review	Approved Changes Q2 Review	Annual Budget	Recommended Changes for Council Resolution Q3	Projected Year End Result	Actual YTD	YTD Actual / Annual Budget	Last Year Actual
Council Service	2013-14 \$'000	2013-14 \$'000	2013-14 \$'000	2013-14 \$'000	2013-14 \$'000	2013-14 \$'000	2013-14 \$'000	%	2012-13 \$'000
Corporate Governance	-	-	50	50	-	50	48	96.0%	39
Finance Performance	-	11	-	11	21	32	10	90.9%	32
Financial Systems	350	(11)	(239)	100	(73)	27	-	0.0%	-
Integrated Planning	90	-	(11)	79	(34)	45	-	0.0%	107
System Support	-	-	550	550	309	859	7	1.3%	81
Information Technology	438	-	563	1,001	(103)	898	258	25.8%	590
Information Management Management	273	-	-	273	(156)	117	-	0.0%	130
Organisational Development	60	-	-	60	-	60	6	10.0%	-
Remuneration, WHS and Well Being	-	-	-	-	-	-	-	-	60
Rangers	21	-	-	21	2	23	16	76.2%	-
Animal Care Facility	2	-	-	2	(2)	-	-	0.0%	-
Building Certification, Compliance and Health Management	-	-	-	-	-	-	-	-	56
Natural Areas	1,480	(106)	(783)	591	137	728	271	45.9%	557
Recreation Planning and Development	660	6	189	855	116	971	570	66.6%	2,013
Parks and Sportsfields	175	-	-	175	80	255	71	40.6%	-
Community and Culture Programs	10	-	(10)	-	-	-	-	-	-
Care and Education	62	-	-	62	18	80	22	35.4%	46
Community Planning and Learning	-	-	-	-	50	-	-	-	50
Community Infrastructure	4,600	-	(86)	4,514	(140)	4,374	2,465	54.6%	484
Libraries	776	-	-	776	-	776	497	64.0%	737
Customer Engagement	-	-	-	-	-	-	-	-	54
Strategic Development	1,760	-	410	2,170	(817)	1,353	431	19.9%	631
Development Management	1,500	(356)	(626)	518	(374)	144	70	13.5%	-
Property Services	2,145	479	(1,095)	1,529	1,129	2,658	1,222	79.9%	1,104
Building Services	109	(36)	-	73	2	75	60	82.2%	342
Holiday Parks	329	110	46	485	80	565	567	116.9%	221
Cemeteries	130	-	(100)	30	-	30	-	0.0%	11
Plant and Fleet	5,582	13	(452)	5,143	-	5,143	4,044	78.6%	7,052
Waste	8,634	(265)	-	8,369	(310)	8,059	3,702	44.2%	847
Water	8,003	915	-	8,917	(475)	8,442	3,757	42.1%	8,707
Sewer	10,663	(912)	(2,491)	7,260	(944)	6,316	4,066	56.0%	12,223
Waterways and Coastal	3,354	(303)	-	3,051	(1,067)	1,984	862	28.3%	825
Emergency Management	1,113	-	(578)	535	(54)	481	59	11.0%	358
Hydrology	-	-	-	-	-	-	1	-	(1)
Roads & Drainage Construction	29,249	309	4149	33,707	153	33,860	20,647	61.3%	27,973
Roads & Drainage General Works	2,208	147	513	2,868	(447)	2,421	1,193	41.6%	2,078
Roads & Drainage Assets and Planning	52	-	-	52	5	57	15	28.8%	21
Contract and Project Management	-	-	-	-	70	70	42	-	-
Employee Overheads	-	-	-	-	29	29	-	-	-
Total	83,827	-	-	83,826	(2,795)	81,031	44,979	53.7%	67,430

4.7. Proposed Budget Amendments

Proposed Budget Amendments	Impact by Major Account Category \$ 000's				
	Capital Revenue	Capital Expenditure	Operating Revenue	Operating Expenditure	Operating Movement
	+ve Incr. (-ve) Decr.	(-ve) Incr. +ve Decr.	+ve Incr. (-ve) Decr.	(-ve) Incr. +ve Decr.	
Original Budget	14,644	83,827	230,776	233,120	(2,344)
Q1 Adjustments	14	(0)	2,572	2,572	0
Q1 Adopted Budget	14,658	83,827	233,348	235,692	(2,344)
Q2 Adjustments	(3,444)	-	811	(811)	(0)
Q2 Adopted Budget	11,214	83,827	234,159	236,503	(2,344)
CAPEX Committee Review - Q3 amendments refer Attachment 4.8	729	2,795	-	-	-
Rephase and increase developer contribution income for Sewer	587	-	-	-	-
Adjust Waste budget to reflect a reduction in tonnages and operating expenses	-	-	(3,633)	3,120	(513)
Reduce interest expense for indexation of prepaid developer contributions	-	-	-	115	115
Repairs and recovery of costs for damage to an awning at Wyong Pool	-	-	4	(4)	-
Reduction in sewer user charges due to the introduction of a discharge allowance by IPART	-	-	(71)	-	(71)
Align budget for sludge dewatering contract to timing of works	-	-	-	280	280
Increase Holiday Park expense related to settlement of legal dispute	-	-	-	(492)	(492)
Increase Holiday Park revenue and expenditure to reflect actual and forecast activity	-	-	256	(236)	20
Allocate Property Development budgets to specific projects and reduce remaining unallocated balances	-	-	10	200	209
Savings in Industrial Special Risk and Public Liability insurances due to negotiated excess on premiums and lower number of incidents	-	-	-	400	400
Additional interest on fixed rate loans due to budgeted savings related to early repayment of loans not being realised	-	-	-	(138)	(138)
Reduction in payroll tax due to actual labour costs being lower than budget as a result of vacancies	-	-	-	200	200
Removal of budgeted gain on disposal of land, partially offset by deferred building maintenance works on the council administration building	-	-	(200)	97	(103)
Reduced costs associated with delivery of Waterways services following restructure, including reduced income and expenses associated with unsuccessful grant funding for floodplain projects	-	-	(51)	1,443	1,392
Additional grant revenue related to Youth programs, additional facilities income and realignment of phasing and program savings provided for Community Partnerships & Planning	-	-	77	19	95
Realignment of phasing and account allocation for Library Services & program savings provided	-	-	-	25	25
Align Nursery budget with current forecasts (in particular internal revenues) following closure	-	-	-	(11)	(11)
Reduce internal plant hire revenue to align with reductions in internal expenditure budgets.	-	-	-	(1,055)	(1,055)
Align Plan First Levy income and expense and reallocate income budgets to reflect correct allocations	-	-	137	(137)	-
Removal of budget associated with implementation of Joint Services Business	-	-	-	3,098	3,098
Remove duplicate budget for Figtree Workers Compensation system	-	-	-	45	45
Q3 Adjustments	1,316	2,795	(3,472)	6,969	3,497
Q3 Proposed Full Year Budget	12,530	81,033	230,688	229,535	1,153

4.8. Proposed Capital Expenditure Amendments

Proposed Q3 Capex Changes			
Projects Deferred or Removed			
Unit	Project Name	Amount \$'000	Comments
Finance	Finance Unit Continuous Improvement and Corporate System Projects	(86)	Deferral of some elements of projects
Open Space and Recreation	Beach access upgrades	(40)	Two projects completed, another two have had plans and approvals completed - defer the works until 2014/15
Open Space and Recreation	EDSACC Tennis Court Surface Replacement	(65)	Remove budget as external funding has not been secured
Water and Sewer	Water and Sewer Projects - changes to program delivery timetable	(1,419)	Various projects reduced to reflect full year forecast expenditure
Roads and Drainage	Drainage Construction Projects - changes to program delivery timetable	(727)	Due to fast-tracking Wyong CBD drainage project, several other drainage projects have been deferred to 2014/15
Waterways and Asset Management	North Entrance Flood Gates	(27)	Project completed for lower cost than anticipated
Waterways and Asset Management	Rural Fire Service Manning Park Station Upgrade	(53)	Partial deferral to 2014/15
Waterways and Asset Management	Deferral of Norah Head Boat Ramp ancillary works	(80)	Project Deferred 2014/15
Waterways and Asset Management	Gross Pollutant Trap program	(980)	Program savings and deferrals
Property Development	Purchase Azzuro building from Crown	(374)	Purchase will not occur before 30 June 2014
Property Development	Budgewoi Village Link Access Ramps	(30)	Project unable to be completed by 30 June 2014
Commercial Enterprises	Waste - Soil Processing Facility	(200)	Project Deferred 2014/15
Commercial Enterprises	Waste - Leachate Works Area 3	(110)	Project Deferred 2014/15
	Sub Total	(4,191)	
Projects Bought Forward or Increased			
Unit	Project Name	Amount \$'000	Comments
Employee Overheads	Capital Purchases Legal and Governance Unit	29	Purchase of Figtree IT solution for Workers Compensation team
Information Management	Information Management Projects	50	Adjustments to IT suite of projects
Open Space and Recreation	Upgrade and Replace Playgrounds - Playground Management Program	4	Funding for completion of project from 2012/13
Open Space and Recreation	Install Sub Soil Drainage at EDSACC North Playing Fields	8	Increase budget to match project expenditure
Open Space and Recreation	Coast To Lake Walk	20	Additional funds required to complete Swadling Reserve path and boardwalk
Open Space and Recreation	Tennis Court Re-surfacing - Wyong Tennis Facility	25	Grant received from NSW Office of Communities - Sport & Recreation
Open Space and Recreation	Jack Gear Reserve synthetic cricket pitch and 1/2 practice court	30	50% grant funded (Mayor's request)
Open Space and Recreation	Lake Haven Skate Park Relocation	39	Additional funds required for the relocation of Lake Haven Skate Park
Open Space and Recreation	Drainage and resurfacing works at Lake Munmorah Netball Courts	55	Court surfaces are damaged
Open Space and Recreation	Replacement of floodlighting at Eastern Oval	80	Urgent works required
Open Space and Recreation	Norah Head Boat Ramp	177	To align with Council Resolution for this project March 2014
Roads and Drainage	Road Construction Projects - changes to program delivery timetable	437	Projects re-aligned to available resources
Waterways and Asset Management	The Entrance Sea Wall Renewal	20	To provide additional pathway in conjunction with the rest of the project
Commercial Enterprises	Holiday Parks Capital Works	80	Capital costs incurred at finalisation of Jenbuild contract (partially offset by \$40k counter claim)
Property Management	Wheelchair Access Doors - Council Civic Centre Atrium	7	Urgent works were required
Property Management	Purchase of Progenis Property Management system	62	Purchase of 'ProgenNet' - Property Management software designed for Government, Utilities and Corporate owners & managers
Property Management	Land Acquisition Lake Road Tuggerah, Pioneer Dairy Regional Sporting Complex	200	Compulsory Acquisition
Property Development	Memorial Park, The Entrance - Design & Documentation	73	Increase to budget for Design Consultant
	Sub Total	1,396	
	Net Movement	(2,795)	